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▪ 학회사발간위원회  주명수
▪ 재단사무부부장  백재현

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2018년 평의원회  2018.4.10 기준 (성명 가나다순 총 89명)

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2018년도 제70차 추계학술대회 안내

2018년도
제70차 대한비뇨기과학회 추계학술대회

· 일자: 2018년 11월 28일(수) ~ 30일(금)
· 장소: 서울 The-K 호텔 컨벤션센터
2018년도
대한비뇨기과학회
통합학술대회
2018 KUCE

Program
## PROGRAM AT A GLANCE

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대한요로생식기감염학회

Practical Management of Genitourinary Tract Infection and Inflammation

좌장 : 나용길(충남의대), 김영호(순천향의대)

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<td>심지성(고려의대)</td>
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<td>Clinical Significance of Mycoplasma and Ureaplasma Families in Genitourinary Tract</td>
<td>이형호(국민건강보험공단 일산병원)</td>
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4월 13일(금) 제2회의장(105+106)

대한배뇨장애요실금학회

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좌장 : 김대경(을지의대)

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Session 2. OAB Update

좌장 : 이택(인하의대)

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<td>13:40-13:50</td>
<td>항콜린약제 사용에 주의할 점</td>
<td>윤하나(이화의대)</td>
</tr>
<tr>
<td>13:50-14:00</td>
<td>베타 Agonist 사용에 주의할 점</td>
<td>김형곤(건국의대)</td>
</tr>
<tr>
<td>14:00-14:10</td>
<td>방광내 보툴리눔독소 주입술에 주의할 점</td>
<td>김선옥(전남의대)</td>
</tr>
<tr>
<td>14:10-14:20</td>
<td>질의 및 응답</td>
<td></td>
</tr>
</tbody>
</table>

4월 13일(금) 제3회의장(107+108)

대한비뇨기초음파학회

Mini Hands-On U/S of the Kidney and Adrenal Gland

좌장 : 김태형(중앙의대)

<table>
<thead>
<tr>
<th>시간</th>
<th>토론 주제</th>
<th>발표자</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00</td>
<td>Program Overview</td>
<td></td>
</tr>
<tr>
<td>13:00-13:40</td>
<td>How to Control the U/S Machine with Live Kidney U/S Demo</td>
<td>오영택(연세의대 영상의학과)</td>
</tr>
<tr>
<td>13:40-13:50</td>
<td>초음파파인중제도</td>
<td>삼중석(대구가톨릭의대)</td>
</tr>
<tr>
<td>13:50-14:20</td>
<td>Mini Hands-on U/S</td>
<td>Audience</td>
</tr>
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</table>
### 제4회의장 (204+205) 

<table>
<thead>
<tr>
<th>시간</th>
<th>제목</th>
<th>발연</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:00-13:25</td>
<td>Application of 3D Printing in Urology</td>
<td>김창수(울산의대)</td>
</tr>
<tr>
<td>13:25-13:50</td>
<td>Brief Introduction to Artificial Intelligence and its Applications in Urology</td>
<td>조백환(삼성서울병원 스마트 해스케어 연구센터)</td>
</tr>
<tr>
<td>13:50-14:15</td>
<td>Brief Introduction to Nanotechnology and its Application in Urology</td>
<td>이관희(KIST)</td>
</tr>
</tbody>
</table>

### 제2회의장 (105+106) 

<table>
<thead>
<tr>
<th>시간</th>
<th>제목</th>
<th>발연</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:20-14:40</td>
<td>실제 사례를 중심으로 한 장기노인요양급여 의사 소견서 발급</td>
<td>조영삼(성균관의대)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>치매특별등급 의사소견서 발급을 위한 준비과정과 임상에의 적용</td>
<td>민승기(국립경찰병원)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>나도 노인요양병원 설립을 하고 운영할 수 있다</td>
<td>노동훈(카네이션 요양병원)</td>
</tr>
<tr>
<td></td>
<td>패널 : 강동일(부산성모병원), 배상락(가톨릭의대), 김수진(연세의대), 김준석(광주기독병원)</td>
<td></td>
</tr>
</tbody>
</table>

### 제1회의장 (101+102) 

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>14:20-14:40</td>
<td>전립선 암 치료와 관련된 의료분쟁 조정중재 과정에 대한 이해</td>
<td>박재영(고려의대)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>Focal Therapy Can Be the Next Step on Prostate Cancer Treatment?</td>
<td>김수동(동아의대)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>Oligometastatic Prostate Cancer: From Diagnosis to Treatment</td>
<td>고영휘(연남의대)</td>
</tr>
<tr>
<td>15:20-15:40</td>
<td>Update in Metastatic Castration-Resistant Prostate Cancer (mCRPC) Treatment</td>
<td>이상철(서울의대)</td>
</tr>
</tbody>
</table>
## 대한ENDOUROLOGY학회

<table>
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<tr>
<th>시간</th>
<th>토론 주제</th>
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<tbody>
<tr>
<td>14:20-14:40</td>
<td>Metabolic Syndrome and Urolithiasis</td>
<td>김재현(순천향의대)</td>
</tr>
<tr>
<td>14:40-15:00</td>
<td>Pros and Cons in the Stone Surgery</td>
<td>박주현(서울의대)</td>
</tr>
<tr>
<td>15:00-15:20</td>
<td>How to Manage Inguinal Hernia during/after RALP</td>
<td>최훈(고려의대)</td>
</tr>
<tr>
<td>15:20-15:40</td>
<td>A.I. &amp; Robotic Surgery</td>
<td>곽현중(충남의대 의공학과)</td>
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</table>

## 대한소아비뇨기과학회

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<th>토론 주제</th>
<th>발표자</th>
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<tbody>
<tr>
<td>16:10-16:25</td>
<td>Metabolic Workup and Medical Treatment</td>
<td>김성철(인제의대)</td>
</tr>
<tr>
<td>16:25-16:40</td>
<td>Extracorporeal Shock Wave Lithotripsy</td>
<td>김홍욱(건양의대)</td>
</tr>
<tr>
<td>16:40-16:55</td>
<td>Ureteroscopic Management including RIRS</td>
<td>최재영(영남의대)</td>
</tr>
<tr>
<td>16:55-17:10</td>
<td>Percutaneous Nephrolithotomy</td>
<td>김범수(경북의대)</td>
</tr>
<tr>
<td>17:10-17:30</td>
<td>Case Discussion</td>
<td>김상운(인세의대)</td>
</tr>
</tbody>
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## 대한비뇨기종양학회

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<tbody>
<tr>
<td>16:10-16:25</td>
<td>Targeting the Immune System</td>
<td>함원식(연세의대)</td>
</tr>
<tr>
<td>16:25-16:40</td>
<td>Prostate Cancer</td>
<td>김선일(아주의대)</td>
</tr>
<tr>
<td>16:40-16:55</td>
<td>Renal Cell Carcinoma</td>
<td>최석환(경북의대)</td>
</tr>
<tr>
<td>16:55-17:10</td>
<td>Urothelial Carcinoma</td>
<td>구자현(서울의대)</td>
</tr>
<tr>
<td>17:10-17:30</td>
<td>Panel Discussion</td>
<td>서호경(국립암센터)</td>
</tr>
</tbody>
</table>

패널: 강석호(고려의대), 구자현(서울의대), 남종길(부산의대), 정승일(전남의대)
4월 13일(금) 제3회의장(107+108)

대한남성과학회

Office-based Diagnosis and Management of Erectile Dysfunction
좌장 : 양대열(한림의대), 문두건(고려의대)

16:10-16:25 Basic Evaluation
김태범(가천의대)

16:25-16:40 Practical Advice for Lifestyle Modifications
이원기(한림의대)

16:40-17:00 Management of Non-responders to PDE5 Inhibitor
조민철(서울의대)

17:00-17:15 What’s New in the ED Management
이준녕(경북의대)

17:15-17:30 Panel Discussion with Clinical Cases
Case Presenter : 신홍석(대구가톨릭의대)
패널 : 김태범(가천의대), 이원기(한림의대), 조민철(서울의대), 이준녕(경북의대)

4월 13일(금) 제4회의장(204+205)

대한요로밖에손재건연구회

Recent Update in Urogenital Reconstructive Surgery
좌장 : 박홍석(고려의대)

16:10-16:30 Key Point of Posterior Urethroplasty
성현환(성균관의대)

16:30-16:50 Management of Bladder Neck Stenosis and Urethral Stricture Following Treatment for Prostate Cancer
변종현(성균관의대)

16:50-17:10 Management of Post Radiation Vesico-vaginal Fistula
고광진(한림의대)

17:10-17:30 Management of High Grade Blunt Renal Trauma
안순태(고려의대)
### 4월 14일(토) 제3회의장(107+108)

<table>
<thead>
<tr>
<th>시간</th>
<th>내용</th>
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<tbody>
<tr>
<td>09:30-09:35</td>
<td>Opening Remark</td>
</tr>
<tr>
<td>09:35-10:10</td>
<td>비뇨의학과 의사들을 위한 연명의료 결정법 해설</td>
</tr>
<tr>
<td>10:10-10:15</td>
<td>질의 및 응답</td>
</tr>
<tr>
<td>10:15-10:40</td>
<td>2017년도에 개정된 의사윤리지침 소개</td>
</tr>
<tr>
<td>10:40-10:45</td>
<td>질의 및 응답</td>
</tr>
<tr>
<td>10:45-11:10</td>
<td>전공의 의료윤리교육; 내과학회의 사례를 중심으로</td>
</tr>
<tr>
<td>11:10-11:15</td>
<td>질의 및 응답</td>
</tr>
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### Session 2. 산재심사와 분쟁

<table>
<thead>
<tr>
<th>시간</th>
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<tbody>
<tr>
<td>11:15-11:35</td>
<td>비뇨의학과 영역의 현황과 문제점</td>
</tr>
<tr>
<td>11:35-11:40</td>
<td>질의 및 응답</td>
</tr>
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### 4월 14일(토) 제1회의장(101+102)

<table>
<thead>
<tr>
<th>시간</th>
<th>내용</th>
</tr>
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<tbody>
<tr>
<td>09:00-09:10</td>
<td>전공의를 향한 학회장 메시지</td>
</tr>
<tr>
<td>09:10-09:25</td>
<td>MR-US Fusion Prostate Biopsy</td>
</tr>
<tr>
<td>09:25-09:40</td>
<td>신경인성방광 환자를 두려워 하지 말자</td>
</tr>
<tr>
<td>09:40-09:55</td>
<td>변화된 보험 급여 기준에 따른 비뇨기암 항암치료의 실제 적용</td>
</tr>
<tr>
<td>09:55-10:05</td>
<td>질의 및 응답</td>
</tr>
<tr>
<td>10:05-10:20</td>
<td>Management of Rising PSA after a Negative Prostate Biopsy</td>
</tr>
<tr>
<td>10:20-10:35</td>
<td>응급실에 내원한 Priapism 환자의 치료</td>
</tr>
<tr>
<td>10:35-10:50</td>
<td>음경보형물 삽입술에 대한 실제적인 접근(수술방법)</td>
</tr>
<tr>
<td>10:50-11:00</td>
<td>질의 및 응답</td>
</tr>
<tr>
<td>11:00-11:20</td>
<td>Break Time</td>
</tr>
</tbody>
</table>
전공의 연수강좌 (3)

11:20-11:40 남성 외음부의 피부 질환
   좌장 : 박용진(박 비뇨기과)
   정도민(대한비뇨기과학회 부회장)
   김경희(미즈루브 여성비뇨기과)

11:40-12:00 여성 외성기의 피부 질환
   정도민(대한비뇨기과학회 부회장)
   김경희(미즈루브 여성비뇨기과)

12:00-12:10 질의 및 응답

4월 14일(토)
제2회의장(105+106)

지도전문의교육

진행 : 정재민(부산의대)

09:30-10:30 연차별 수련목표 및 수련내용
   순철천(부산의대)

10:30-11:30 수련과목에 대한 국제적 동향 및 최신 정보
   하유신(가톨릭의대)

11:30-12:30 수련교육 프로그램의 효과적인 평가방법
   오영진(부산의대)

12:30-13:30 비뇨의학과 전문의 자격 취득요건 및 자격시험
   정재민(부산의대)

4월 14일(토) 103호

보험정책강좌

좌장 : 이영구(대한비뇨기과학회 부회장)

진행 : 민승기(대한비뇨기과학회 보험이사)

09:30 Opening Remark
   천 준(대한비뇨기과학회 회장)

09:30-10:10 의학적비급여 급여화 정책방향 - 로봇수술 급여화 방향 포함
   손영래(보건복지부 예비급여과장)

10:10-10:20 질의 및 응답
   손영래(보건복지부 예비급여과장)

10:20-11:00 국민건강보험 보장성 강화 정책방향
   김용익(국민건강보험공단 이사장)

11:00-11:10 질의 및 응답

4월 14일(토) 104호

ICUrology Workshop

좌장 : 박광성(Editor-in-Chief, ICUrology)

09:40-10:00 Current Update of ICUrology 및 편집위원회 회의
   박재영(고려의대)

10:00-10:30 ESC에서 SCIE로 가는 길
   혜선(한림의대 기생충학교실, 과학학술지 편집인협의회 부회장)

10:30-11:00 ScholarOne 논문 투고 시스템 소개
   한민정(Clarivate Analytics)

11:00 사진촬영 및 폐회
2018년도 대한비뇨기과학회 통합학술대회 2018 KUCE

초록심사위원명단 (학술위원회)

곽철 정창욱 강민용 구자현 김계환 김수진 김형준 나웅 박현준 백민기 임영재 정승일 정인갑 조성용 최석환 최세민 하홍구 한병규

Abstract
P-001 The efficacy of androgen deprivation therapy in castration-resistant prostate cancer patients receiving docetaxel-based chemotherapy

Kyung Chan Min1, Soon Oh Kwon1, Jun-Koo Kang1, Joe-Wook Chung2, Yun-Sok Ho3, Jun Nyung Lee4
Bum Soo Kim4, Hyun Tae Kim4, Tae-Hwan Kim4, Eun Sang Yoo4, Tae Gyun Kwon4, Sung Kwang Chung4
Masatoshi Tanaka5, Takahiro Kimura5, Shin Egawa5, Seock-Hwan Choi1

1Department of Urology, Kyungpook National University Hospital, Daegu, 2Department of Urology, Kyungpook National University Chilgok Hospital, Daegu, Korea, 3Department of Urology, Jikei University School of Medicine, Tokyo, Japan

P-002 Importance of testosterone level at the 1 year follow-up of ADT: classic vs new castration level of testosterone more appropriate for Predicting oncologic outcome

Byeong Jin Kang, Si Kyun Park, Jih Hoon Park, Seung Ryong Boek, Kyung Hwan Kim, Ja Yoon Ku, Hong Koo Ha

Department of Urology, Pusan National University Hospital

P-003 Clinical utility of transperineal template-guided prostate biopsy for risk stratification after transrectal ultrasound-guided biopsy

Jong Hoon Lee, Hyung Chan Choi, Wan Song, Min Yong Kang, Hyun Hwan Sung, Byong Chang Jeong, Seong Il Seo, Seong Soo Jeon, Hyun Moo Lee, Han Yong Choi, Hwang Gyun Jeon

Department of Urology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

P-004 Verification for staging groups suggested by eighth edition of the American Joint Committee on cancer in patients with localized prostate cancer: emphasis on the gleason score

Byeongdo Song1, Hakmin Lee1, Minseung Lee1, Seok-Soo Byun1, Sang Eun Lee1, Sung Kyu Hong1,2

1Department of Urology, Seoul National University Bundang Hospital, Seongnam, 2Department of Urology, Seoul National University College of Medicine, Korea

P-005 Impact of lymph node metastases on prognosis after radical prostatectomy for patients with oligometastatic prostate cancer

정재용, 장효석, 김만수, 이종수, 고정훈, 김종찬, 함현식, 최영득

Department of Urology, Urological Science Institute, Yonsei University College of Medicine, Seoul, Korea

P-006 The association of a number of risk factors with depression in patients with prostate cancer undergoing androgen deprivation therapy

박진현, 김광택, 오제환, 정경진, 김태범, 김재현, 정한, 윤상진, 김창희

가톨릭의대 비뇨의학과

P-007 The influence of preoperatively detected detrusor overactivity on the storage symptoms after radical prostatectomy

주지혜, 양종혁, 성재우, 이경원, 문형우, 강성민, 배용진, 박용원, 조형진, 하윤선, 홍성후, 김서용, 이지영

가톨릭의대 비뇨의학과

P-008 Association between prostate cancer and metabolic health status: Korean national health check-up data

김재원, 이동현, 정형국, 안승현, 오미미, 문두선, 박영석

고려대학교 구로병원 비뇨의학과

P-009 Impact of early salvage androgen deprivation therapy on survival in non-organ confined prostate cancer after radical prostatectomy

박재현1,2, 정효석2, 고동훈1, 이종수3, 김진원2, 전진형2, 최영득2

1국민건강보험공단 일산병원 비뇨의학과, 2연세대학교 비뇨의학과
P-010 The cumulative incidence and risk factors of postoperative inguinal hernia in patients undergoing radical prostatectomy

P-011 Association between positive surgical margins and biochemical recurrence in high-risk prostate cancer patients

P-012 이성호 훈민 민감성 전립선암 환자에서 modified Glasgow prognostic score가 종양학적 결과에 미치는 영향

P-013 Androgen deprivation therapy should not be used as monotherapy in high or very high risk localized prostate cancer

P-014 Prognostic factors for oncologic outcomes in metastatic chemotherapy-naïve castration-resistant prostate cancer with enzalutamide in real world

P-015 Docetaxel 항암화학요법 치료를 받는 거세 저항성 전립선암 환자에서 남성호르몬박탈요법의 기간이 종양학적 결과에 미치는 영향

P-016 Impact of clinical trial participation on survival in patients with castration-resistant prostate cancer: a multi-center analysis

P-017 Long-term outcomes of the extraperitoneal robot-assisted laparoscopic radical prostatectomy

P-018 Optimal sequencing strategy using docetaxel and androgen receptor axis-targeted agents in patients with castration-resistant prostate cancer: utilization of neutrophil-to-lymphocyte ratio

P-019 Comparison of hypoechoic lesion-targeted biopsy vs magnetic resonance imaging-cognitive targeted biopsy for prostate cancer detection

P-020 홀반 림프절 절제술이 고위험 전립선암의 종양학적 결과에 미치는 영향

P-021 전이성 전립선암 환자에서 원발암에 대한 국소치료로써의 전립선 절제술과 방사선 치료의 종양학적 결과 비교

Withdrawal
P-022 Concurrent validation of a robotic simulator curriculum focused on “core” exercises: does it help overcome baseline skill levels?
장재윤, 장준복, 최재영, 송필현, 문기학, 정희창, 고영휘
영남의대 비뇨의학교

P-023 Prediction of MRI PI-RADS™ version 2 score of prostate extracapsular extension in radical prostatectomy
박민욱, 이장희, 한재현
울산대학교 서울아산병원 비뇨의학교

Withdrewal

Poster Session 2: Cancer - Others (P024-P040)

2018년 4월 13일(금)~14일(토) e-Poster

P-024 Retrospective analysis of the concordance of 20 immunohistochemical tissue markers in metastasectomy lesions in patients with metastatic renal cell carcinoma
Min young Yoon1, Sung Han Kim1, Weon Seo Park2, Eun Young Park3, Jungnam Joo3, Yoon Seok Suh1, Jinsoo Chung3
Departments of 1Urology, 2Pathology, Prostate Cancer Center, National Cancer Center, Goyang, 3Biometrics Branch, Research institute and National Cancer Center, Goyang, Korea

P-025 Adjuvant chemotherapy for locally advanced muscle-invasive bladder cancer: systematic review and meta-analysis of randomized clinical trials
Do Kyung Kim1, Joo Yong Lee1, Joe Hung Jung2, Yoon Soo Ha3, Kyo Chul Koo4, Kwang Suk Lee5, Byung Ho Chung6, Kang Su Cho1
1Department of Urology, Yonsei University College of Medicine, 2Department of Urology, Yonsei University Wonju College of Medicine

P-026 A systematic review and meta-analysis for neoadjuvant chemotherapy for upper tract urothelial carcinoma
Do Kyung Kim1, Joo Yong Lee1, Joe Hung Jung2, Yoon Soo Ha3, Kyo Chul Koo4, Kwang Suk Lee5, Byung Ho Chung6, Kang Su Cho1
1Department of Urology, Yonsei University College of Medicine, 2Department of Urology, Yonsei University Wonju College of Medicine

P-027 Do patients benefit from total intracorporeal robotic radical cystectomy?
Jonghyun Tae1, Ji Sung Shim1, Tae Gyun Kwon1, Koon Ho Rho2, Young Goo Lee3, Ji Youl Lee3, Byung Chang Jeong4, Joo Yong Kim4, Jong Hyun Pyun5, Sung Gu Kang6, Seok Ho Kang6
1고려의대 비뇨의학교, 2경북의대 비뇨의학교, 3연세의대 비뇨의학교, 4한림의대 비뇨의학교, 5가톨릭의대 비뇨의학교, 6성균관의대 비뇨의학교

P-028 The impact of waist circumference difference on the risk of bladder cancer: a nationwide cohort study
최진봉, 홍성후, 하유신
가톨릭의대 비뇨의학교

P-029 Safety of the robot-assisted partial nephrectomy without cortical renorrhaphy
김성민, 성재우, 조재현, 양종협, 이규현, 문형우, 백용진, 박웅현, 조혁진, 하유신, 이지열, 김세웅, 홍성후
가톨릭의대 비뇨의학교

P-030 Metabolically unhealthy condition makes more bladder cancer: analysis from the National Health check-up database in Korea
김종욱, 정형국, 이동현, 안순태, 오미미, 문두건, 박홍석
고려대학교 구로병원 비뇨의학교
P-031 Prognostic value of preoperative pyuria in upper urinary tract urothelial cell carcinoma

Ji-Bok Jo, Tae-Bok Shim, Hyun Eun Bae, Jae-Hee Kim, Yong-Kyu Park, Bae-Jeong Park

Gyeongsang National University Biomedical Laboratory, 2Gyeyang Biomedical Laboratory

P-032 Robot-assisted radical cystectomy (RARC): robot naive surgeon 10 years experience with the 118 cases focused on total intracorporeal urinary diversion technique

Youn-Su Yun, Seok-Hun Kim, Ji-Tae Nam, Heung-Suk Lee, Jin-Soo Park, Tae-Woong Lee

P-033 Prognostic indicator for pulmonary metastasis in renal cell carcinoma patients underwent radical nephrectomy

Kim Jeong-Hoon, Bang-Hun Kim, Kang-Bin Kim, Park-Su Kim, Yi-Gun Kim, Gyu-Jae Park, Ha-Hoon Kim

P-034 Upper urinary tract urothelial carcinoma: the impact of preoperative pyuria on chemotherapy resistance

Kim Young-Koo, Shin Jung-Ho, Lee Tae-Hyun, Kim Taek-Jin, Yi Joon-Kuk, Hong-Youl Lee

P-035 The impact of squamous variant on oncological outcome in bladder cancer patients after radical cystectomy

Park Hee-Jin, Kim Young-Kee, Oh Seong Kwon, Lee Young Goo, Kim Khae-Hawn

P-036 Prognostic value of heat shock protein 27 in bladder cancer

Kim Hyun-Soo, Shin Hyo-Sang, Na Hyun-Soo, Shin Hyun-Kyung, Kim Tae-Sun, Lee Young Goo

P-037 Inactivation of NBR1 improves sensitivity to rapamycin on bladder cancer cells through AMPK/ULK1-mediated autophagy


P-041 Individualized add-on treatment based on the difference of receptor of alpha blocker in animal models of overactive bladder and benign prostate hyperplasia

Sung Tae Cho, Don Kyoung Choi, Oh Seong Kwon, Young Goo Lee, Khoe Hawn Kim

P-042 Withdrawal

P-043 Withdrawal

Poster Session 3: LUTS/BPH

2018년 4월 13일(금)~14일(토)

P-041 Individualized add-on treatment based on the difference of receptor of alpha blocker in animal models of overactive bladder and benign prostate hyperplasia

Sung Tae Cho, Don Kyoung Choi, Oh Seong Kwon, Young Goo Lee, Khoe Hawn Kim

1Department of Urology, Hallym University Kangnam Sacred Heart Hospital, Hallym University College of Medicine, Seoul,
2Department of Urology, Gachon University Gil Hospital, Incheon, Korea
P-042 2, 3차 병원을 내원한 전립선비대증 환자의 배뇨증상 및 저장증상 분포와 이에 따른 삶의 질 분석: 다기관, 관찰적, 단면적 역학연구
조희주1, 문경태1, 조정만1, 강정윤1, 유탁근2, 이승욱2
1음성의대 비뇨의과학과, 2한양의대 비뇨의과학

P-043 Anterior depth of prostate: morphological factor associated with de novo urinary incontinence following holmium laser enucleation of the prostate
Jun Seok Kim, Dong Hoon Yoo, Wonsik Jeong, Sung Woon Park, Joon Hwa Noh
Department of Urology, Kwangju Christian Hospital, Gwangju, Korea

P-044 The pitfalls of transrectal ultrasonography in the evaluation of prostatic urethral angle
이주용, 장해도, 함원식, 나군호, 최영득, 조강수
연세의대 음파의학과, 비뇨의과학연구소

P-045 The effect of surgery for benign prostatic hyperplasia with prostatic calcification
한 현, 김정현, 정재욱, 하윤석, 이중영, 김범수, 김현태, 유은상
경북대병원 영역전문대학원 비뇨의과학과

P-046 전립선비대증환자에 대한 치료로서 제1세대인 80W와 제3세대인 180W XPS GreenLight 레이저를 이용한 광선택적전립선기화술 두 수술간의 효용성 및 안전성 비교
김성태, 박경기, 임영주, 허정식
제주대병원 음파의학과 비뇨의과학과

P-047 Open and robotic simple prostatectomy for huge BPH: comparison of safety and efficacy
문경태, 조희주, 조정만, 강정윤
울지병원 음파의과학과

P-048 Urolift as a minimal invasive intra-prostatic implant for BPH treatment: a pilot study performed in Korea
안창형, 성재우, 조진태, 강성민, 문형우, 이규원, 배응진, 김수진, 조현진, 하윤선, 홍성후, 이지영, 김재웅
가톨릭의대 음파의학과

P-049 Assessment of patient satisfaction with visual analogue scale in treatment of benign prostatic hyperplasia: preliminary report
문경태, 조희주, 조정만, 유탁근, 강정윤
울지병원 음파의학과

P-050 Favorable prognostic factors after TURP in patients with benign prostatic hyperplasia: a single surgeon’s experience
Tae Wook Kang, Chang Min Lee, Hyun Chul Chung, Kwang Jin Kim, Joe Hung Jung, Joe Mann Song
Department of Urology, Yonsei University Wonju College of Medicine, Wonju, Korea

P-051 Predictive risk factors of postoperative urethral stricture following holmium laser enucleation of the prostate during the initial learning period
조재성, 장석훈, 손정환, 이재원
대전의료재단 분당제일병원 비뇨의과학

P-052 Low serum 25-OH vitamin D level plays a role in overactive bladder but not in benign prostatic hyperplasia
유성준, 박주현, 조성웅, 손완철, 정현, 조민철
보라매병원 비뇨의과학과

P-053 Association between female lower urinary tract symptoms and cardiovascular risk scores including Framingham risk score and ACC/AHA risk score
이현영, 문지은, 양현태, 두승환, 김재현, 이상욱, 선화연, 숙윤섭
순천향대학교 1서울병원 비뇨의과학과, 2부천병원 임상시험센터 생물통계학과, 2부천병원 비뇨의과학과
**Poster Session 4: Incontinence, Female Urology and Neurourology (P054-P059)**

2018년 4월 13일(금) ∼ 14일(토) e-Poster

**P-054** The outcomes of transobturator tape (TOT) procedure in women with mixed urinary incontinence

Sumin Son, Tae Hee Kim, Seong Jong Eun, Joe Hyeon Kim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsun Park

Department of Urology, Chonnam National University Hospital, Gwangju, Korea

**P-055** The impact of overactive bladder syndrome on psychological stress: differences according to gender and menopausal status

Jun Seok Kim, Dong Hoon Yoo, Wonsik Jeong, Ji Young Nam, Seong Woon Park, Joon Hwa Noh

Department of Urology, Kwangju Christian Hospital, Gwangju, Korea

**P-056** Increased expression of urothelial aquaporin-1,2 in caveolin-1 knockout mice urinary bladder

Ju Yong Oh, Sumin Son, Seong Jong Eun, Do Kyeong Lim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsun Park

Department of Urology, Chonnam National University Hospital, Gwangju, Korea

**P-057** Evaluation of a new technique using urethral sounds for tape adjustment in mid-urethral sling procedure for female stress urinary incontinence

최진호

단국의대 제일병원 비뇨의학과

**Poster Session 5: Infertility & Sexual Dysfunction (P060-P064)**

2018년 4월 13일(금) ∼ 14일(토) e-Poster

**P-060** Perceptions of condom fit and feel in young men

Seong Jong Eun, Sumin Son, Tae Hee Kim, Seong Jong Eun, Joe Hyeon Kim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsun Park

Department of Urology, Chonnam National University Medical School, Gwangju, Korea

**P-061** Ameliorative effects of DA-9401 on Adriamycin-induced testicular toxicity

Keshab Kumar Karna1, Bo Ram Choi2, Sung Won Lee3, Chul Young Kim4, Hye Kyung Kim4, Jong Kwan Park4

1Department of Urology, Chonbuk National University Medical School and Institute for Medical Sciences, Chonbuk National University and Biomedical Research Institute and Clinical Trial Center for Medical Devices of Chonbuk National University Hospital, Jeonju, 2Department of Urology, Sungkyunkwan University Medical School, Seoul, 3College of Pharmacy, Hangyung University, Ansan, 4College of Pharmacy, Kyungsung University, Busan, Korea

Withdrawal
P-062  Could MKS has a favorable effects in varicocele induced infertility on SD rats?

Keshab Kumar Karna1, Bo Ram Choi1, Sung Won Lee2, Chul Young Kim3, Hye Kyung Kim4, Jong Kwan Park1
1Department of Urology, Chonbuk National University Medical School and Institute for Medical Sciences, Chonbuk National University and Biomedical Research Institute and Clinical Trial Center for Medical Devices of Chonbuk National University Hospital, Jeonju, 2Department of Urology, Sungkyunkwan University Medical School, Seoul, 3College of Pharmacy, Hangyung University, Ansan, 4College of Pharmacy, Kyungsung University, Busan, Korea

P-063  Does the stump size in vasovasostomy can be a predictive factor to improve the outcomes of semen analysis associated with vasal patency?

장재윤, 장준보, 최재영, 고영휘, 송필현, 정희창, 문기학
영남의대 비뇨의학과

P-064  남성갱년기를 동반한 만성콩팥병 환자에서 테스토스테론 보충요법이 삶의 질에 미치는 영향

판인균1, 여정균1, 구호석1
인제의대 1비뇨의학과, 2산장내과

Poster Session 6: Stone & Endourology (P065-P071)

2018년 4월 13일(금)~14일(토)  e-Poster

P-065  Hem-o-lok®에 발생한 요관의 결석

김홍욱, 김형준, 장영서, 김진범
건양의대 비뇨의학과

P-066  채외층각파 세석술 시 통증에 대한 영향인자에 관한 조사

김병훈, 최근봉, 조인창, 민승기
국립경찰병원 비뇨의학과

P-067  Systematic review and meta-analysis to compare success rates of percutaneous nephrolithotomy versus miniature percutaneous nephrolithotomy: an update

조강수, 정해도, 함원식, 함원식, 이주용
연세의대 비뇨의과학과

P-068  Digital videoscopic retrograde intrarenal surgeries for renal stones: time-to-maximal stone length ratio analysis

조강수, 정재용, 김종찬, 정해도, 함원식, 최영득, 이주용
연세의대 비뇨의과학과, 비뇨의과학연구소

P-069  Real-time simultaneous endoscopic combined intrarenal surgery with intermediate-supine position

조강수, 정해도, 김종찬, 안현규, 한웅규, 이주용
연세의대 비뇨의과학과, 비뇨의과학연구소

P-070  Complication rate between extracorporeal shock wave lithotripsy and retrograde intrarenal surgery: an update of systematic review and meta-analysis

조강수1, 홍연아2, 이의정3, 이선희4, 나근호, 이주용1
1연세의대 비뇨의과학과, 비뇨의과학연구소, 2성균관대학교 삼성융합의과학병원 의료기기산업학과, 3성균관대학교 약학대학 재약산업학과, 4가천대학교 간호학과

P-071  요로결석환자에서 클라우드시스템 기반 딥러닝 알고리듬 개발을 통한 초저선량 NECT 자동판독기술의 개발

장인호, 문영태, 김경도, 명순철, 김진욱
중앙의대 비뇨의학과
P-072 Comparison of the hydrocelectomy through the inguinal versus scrotal approach for the treatment of hydrocele in boys
Jeong Hoon Oh, Tae Hee Kim, Do Kyeong Lim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsung Park
Departments of Urology, Chonnam National University Medical School, Gwangju, Korea

P-073 Comparison of testis volume before and after hydrocelectomy measured by ultrasonography in boys
Tae Hee Kim, Ju Yong Oh, Sumin Son, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsung Park
Departments of Urology, Chonnam National University Medical School, Gwangju, Korea

P-074 Evaluation and outcome of stepwise approach to the children with coexisting dilating vesicoureteral reflux and ureteropelvic junction obstruction
전재범, 채한규, 한재현
서울아산병원 비뇨의학과

Poster Session 8: Trauma, Infection and Others (P075-P084)
2018년 4월 13일(금)∼14일(토) e-Poster

P-075 Factors causing sepsis versus septic shock with obstructive urolithiasis are different
최태수, 최정혁, 김영빈, 이상협, 이동기, 이형래, 유구한
Department of Urology, School of Medicine, Kyung Hee University, Seoul, Korea

P-076 Which method is suitable to maximize the clinical effect of temporary urinary diversion for acute pyelonephritis with complicated ureteral stone: double J (DJ) stenting or percutaneous nephrostomy (PCN)
최정혁, 최태수, 유구한
강동대학교 비뇨의학과

P-077 Laminin and PDGF-BB promote neural differentiation of human urine-derived stem cells
강준구, 변경현, 정재욱, 박홍석, 윤은상, 권태균, 이준녕
경북의대 비뇨의학과

P-078 Ultimate fate of recurrent cystitis caused by ESBL-producing E. coli: a prospective longitudinal study
정형국, 이동현, 안순태, 김영빈, 박홍석, 문두건, 오미미
고려대학교 구로병원 비뇨의학과

P-079 Spontaneous perirenal (retroperitoneal) hemorrhage (Wunderlich syndrome): analysis of 22 cases
김종욱, 이동현, 정형국, 안순태, 오미미, 문두건, 박홍석
고려대학교 구로병원 비뇨의학과

P-080 요로 폐색이 동반된 급성 신우신염에서 경피적 신장 창냄술을 시행한 경우의 요배상 검사 상 항생제 감수성
김기호, 권세윤, 서영진, 이경섭
동국의대 경주병원 비뇨의학과

Withdrawal
P-081  Surgical outcomes of urethroplasty by single surgeon (단일 술자에 의해 시행된 요도성형술의 치료 성적)
이충언, 성시현, 성현환
성균관의대 비뇨의학과

P-082  Safety and feasibility of the vaginal specimen extraction after laparoscopic surgery in patients with non-function kidney
정현철, 임송원, 김성용, 양태열, 고경태
한림의대 강동성심병원 비뇨의학과

P-083  Assessment of the quality of randomized controlled trials publishes about premature ejaculation
조정기, 김규식, 정재훈, 최홍용, 이승욱
한양의대 비뇨의학과

P-084  Quality analysis of randomized controlled trials published about erectile dysfunction (2007-2016)
김규식, 정재훈, 최홍용, 김용태, 문홍상, 이승욱
한양의대 비뇨의학과
The efficacy of androgen deprivation therapy in castration-resistant prostate cancer patients receiving docetaxel-based chemotherapy

Kyung Chan Min, Soon Oh Kwon, Jun-Koo Kang, Jae-Wook Chung, Yun-Sok Ha, Jun Nyung Lee, Bum Soo Kim, Hyun Tae Kim, Tae-Hwan Kim, Eun Sang Yoo, Tae Gyun Kwon, Sung Kwang Chung, Masatoshi Tanaka, Takahiro Kimura, Shin Egawa, Seock-Hwan Choi

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Purpose: Until recently, metastatic CRPC patients were unable to receive concurrent docetaxel–based chemotherapy (DTX) and androgen deprivation therapy (ADT) in Korea. In many countries including Japan, CRPC patients can be treated with both ADT and docetaxel chemotherapy. Here we aimed to identify the effectiveness of ADT during docetaxel chemotherapy comparing Korean and Japanese CRPC patient cohorts, which are considered similar Asian populations.

Materials and methods: Patients with metastatic CRPC, treated with more than 3 cycles of docetaxel in Korea and Japan between 2002 and 2017, were divided into the docetaxel-only group (n=32) and combination group (n=46).

Results: There were no significant intergroup differences in age, stage, prostate specific antigen level, Gleason score, or number of docetaxel cycles. The median overall survival was 21.5 months and 30.6 months (p=0.115) in docetaxel-only group and combination group. The median cancer-specific survival was 23.5 months and 30.6 months (p=0.420) in docetaxel-only group and combination group. The median progression-free survival (PFS) showed significant difference between two groups (9.9 months and 14.5 months, log-rank p=0.047).

Conclusion: Our study concluded that concurrent DTX and ADT made significant PFS prolongation in M1 CRPC patients with initial chemotherapy. Since this study included limited patients, a multicenter study with a large number of patients should be performed to validate these findings.

Keywords: Metastatic CRPC, Docetaxel, ADT
Importance of testosterone level at the 1 year follow-up of ADT: classic vs new castration level of testosterone more appropriate for Predicting oncologic outcome

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Introduction & Objective: The Purpose of this analysis is to assess of new castration level of testosterone and whether level of testosterone measured at the 1 year follow-up of Androgen deprivation therapy (ADT) can predict treatment outcomes in patients with prostate cancer.

Material & Methods: Between September 2010 and July 2016, 108 patients recieved Laparoscopic Prostatectomy or RARP by single Surgeon and then, recieved ADTs. Drugs used in ADTs were Bicalutamide (casodex tab 50 mg, bicadex tab 50 mg), Goserelin (zoladex depot pfs 3.6 mg) Leuprolide (leupline 3.75 mg and eligard prefilled dual syringe, etc). After ADT (by surgical or medical modality), Testosterone level reached to the considerable declining level : Castration level.

Classically, Castration level of Testosterone was defined as <1.7 nmol/L. But, in this study, we set new castration level as <1.0 nmol/L which is more appropriated level based on EAU 2017 Guideline. After 1years of ADT, Testosterone level was checked through opd follow-up. Testosterone levels were divided into 2 categories : '<1.0' and '≥1.0' nmol/L and then, '<1.7' and '≥1.7', respectively.

We assessed that Testosterone level after 1year of ADT Rate of Biochemical recurrence can predict treatment outcome (Rate of Biochemical outcome). The result were estimated with Chi-square tests.

Result: At the end of ADTs, Testosterone levels were <1.7 nmol/L in 52.8% (56/106) of patients, 32.1% of patients reached BCR in <1.7 nmol/L group, Pearson Chi-square Value is 16.791 and P-Val. Is 0.00.

Conclusion: That testosterone level at 1 year of ADTs is <1.7 nmol/L (classical castration level) can predict decrease of BCR Rate.

Keywords: 남성호르몬박탈요법, 거세수준

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Clinical utility of transperineal template-guided prostate biopsy for risk stratification after transrectal ultrasound-guided biopsy

Jong Hoon Lee, Hyung Chan Choi, Wan Song, Min Yong Kang, Hyun Hwan Sung, Byong Chang Jeong, Seong Il Seo, Seong Soo Jeon, Hyun Moo Lee, Han Yong Choi, Hwang Gyun Jeon
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**Purpose:** To investigate the clinical utility of transperineal template-guided prostate biopsy (TPB) for risk stratification after transrectal ultrasound (TRUS)-guided biopsy.

**Materials and Methods:** We prospectively collected data of 62 patients who underwent TPB due to negative prostate biopsy previously (N=21) or are candidate for active surveillance (AS, N=41) from May 2017 and January 2018. TPB was performed in a lithotomy position under general anesthesia and the number of biopsy depended on the size of the prostate. Primary end point was to detect clinically significant prostate cancer (PCa).

**Results:** Median age and pre-TPB prostate-specific antigen (PSA) were 65.5 years and 7.9 ng/ml, respectively. A median of 36 biopsy cores was obtained from each subject. An overall PCa detection rate was 50.0% (31/62). Of the 21 men with prior negative TRUS-guided biopsy, PCa was confirmed in 4 (19.0%) patients and one of them had a Gleason score (GS) 8. In addition, of 41 patients candidate for AS, GS of 12 (29.3%) patients was upgraded to GS 7 (N=9, 22.0%) or GS 8 (N=3, 7.3%) requiring definite treatment. In 14 (34.1%) patients, AS was performed because TPB did not reveal additional tumors. PCa with GS6 was confirmed in the remaining 15 (36.6%) patients and 9 of who showed unilateral identification of PCa, thus eligible for focal therapy.

**Conclusions:** TPB has a role to stratify risk of PCa previously missed or under-diagnosed by TRUS-guided biopsy. TPB might be used as a diagnostic tool to determine risk classification and to help counsel patients with regard to treatment decision.

**Keywords:** Transperineal prostate biopsy, Prostate cancer, Risk stratification
Verification for staging groups suggested by eighth edition of the American Joint Committee on Cancer in patients with localized prostate cancer: emphasis on the gleason score

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Introduction: The American Joint Committee on Cancer (AJCC) TNM staging manual has been updated and provided more specific stage group to predict the prognosis of prostate cancer patients. We validate the accuracy of AJCC stage group on the biochemical recurrence (BCR) after surgery.

Materials and Methods: We analyzed the data of 2,522 patients treated by radical prostatectomy who qualified the definitions of 8th edition of AJCC stage groups from IIB to IIIB. We stratified patients into several subgroups according to the Gleason score (GS) and BCR-free survivals were compared using Kaplan-Meier analyses.

Results: There were 1,101 patients in group IIB, 532 in IIC, 132 in IIIA, and 757 in IIIB, respectively. There were no significant differences in BCR-free survival between IIC and IIIA (p=0.875). When we sub-divided IIIA group according to the GS, we could observe significant differences of BCR-free survival (all p<0.001) between subgroups. Low GS IIIA subgroup (GS≤3+4, p=0.025) showed superior BCR-free survival than IIC group and high GS IIIA subgroups (GS≥4+3, p=0.004) showed worse BCR-free survival than IIC group. From our results, we suggest new system which showed better discriminating ability for each group.

Conclusions: The current AJCC prognostic groups showed some contradictory results particularly in the prognosis of IIC and IIIA groups. We suggest that the stage groups of IIC and IIIA should be revised by putting priority on GS instead of prostatic antigen level.

Keywords: 전립선암, 근치적전립선전절제술
Impact of lymph node metastases on prognosis after radical prostatectomy for patients with oligometastatic prostate cancer

정재용, 장원식, 김진우, 이종수, 고동훈, 김종찬, 함원식, 최영득
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Background: Interest in the local treatment of oligometastatic prostate cancer (PC) is greater than ever before. However, limited data exist on prognostic factors affecting the oncologic outcomes after radical prostatectomy (RP) in oligometastatic PC patients. Thus, we investigated the impact of lymph node (LN) metastases on the prognosis after RP and extended pelvic lymph node dissection (ePLND) in these patients.

Methods: We retrospectively reviewed the records of patients treated with RP and ePLND as initial therapies for oligometastatic PC between 2005 and 2015 at our institution. Oligometastatic PC was defined as the presence of five or fewer hot spots detected by preoperative bone scan. After the exclusion of patients with incomplete clinicopathological or follow-up data, 55 men with oligometastatic PC were included in the final analysis. We evaluated progression-free survival (PFS), and cancer-specific survival (CSS). We analyzed data using Kaplan-Meier methods with log-rank tests and multivariate Cox regression models.

Results: Of 55 patients with oligometastatic PC, 21 patients (38.2%) had LN metastases. The median follow-up time was 51 months (interquartile range [IQR] 36.0–84.0). Kaplan-Meier analysis showed that PFS and CSS for patients with LN metastases were significantly lower than those without LN metastases (median PFS: 21 months vs. 75 months, \(p<0.001\); median CSS: 59 months vs. not reached, \(p=0.004\)). Univariate analysis using Cox regression model identified LN metastases as a significant predictor of disease progression (hazard ratio [HR]=4.292, \(p<0.001\)) and cancer-specific death (HR=4.583, \(p=0.008\)).

Conclusions: LN involvement is a negative prognostic factor and should be considered as a surrogate of more aggressive disease in patients with oligometastatic PC. This parameter could potentially be used as a determinant for additional systemic therapies in these patients.

Keywords: Lymph node, Metastatic prostate cancer, Radical prostatectomy
The association of a number of risk factors with depression in patients with prostate cancer undergoing androgen deprivation therapy

박건현, 김광택, 오진규, 정경진, 김태범, 김계환, 정한, 윤상진, 김창희
가천의대 비뇨의학과

**Purpose:** To identify factors affecting depressive symptoms in patients undergoing androgen-deprivation therapy (ADT) to treat prostate cancer.

**Materials and Methods:** The patients with prostate cancer visiting the psychiatry department without referral because of depressive symptoms while undergoing ADT participated. To assess depressive symptoms, the Beck Depression Inventory (BDI) was used. To identify the risk factors affecting depressive symptoms, univariate regression and multiple linear regression analyses were implemented using the following clinical variables: BDI scores; current age; age when initiating ADT; type and length of ADT; disease response to ADT; androgen dependence; serum testosterone level; and use of concurrent chemotherapy with ADT.

**Results:** The mean (±SD) age, age when initiating ADT, duration of ADT, serum testosterone level and BDI scores of participants (n=45) were 73.9±7.9 years, 72±8.5 years, 33±31.6 months, 214.9±219.5 ng/dL and 18±13.5 points. The androgen dependent and independent were 26 and 9 patients. Eight of these androgen-independent patients underwent concurrent chemotherapy. Twenty-one patients were treated with bicalutamide and 24 with leuprolide. Of the clinical variables affecting BDI scores, the type of ADT drug (P<0.001), serum testosterone level (P=0.003), and age at diagnosis (P<0.001) were significant.

**Conclusions:** Efforts to diagnose and treat depression appropriately, especially if depressive symptoms change in patients undergoing ADT to treat prostate cancer who are using an LHRH agonist (leuprolide), have low testosterone level, or are older at the age when initiating ADT.

**Keywords:** 전립선암, 안드로겐결핍요법, 우울증
The influence of preoperatively detected detrusor overactivity on the storage symptoms after radical prostatectomy

조신제, 양종협, 성재우, 이규원, 문형우, 강성민, 박용현, 조혁진, 하유신, 김세웅, 이지열
가톨릭의대 비뇨의학과

Purpose: To investigate the significance of detrusor overactivity (DO) as a predictor of storage symptoms after radical prostatectomy.

Materials and Methods: This study included a total of 153 patients with clinically localized prostate cancer who underwent LRP and RARP between January 2011 and April 2016. The patients were divided into 2 groups, according to the detrusor overactivity detected by urodynamic study preoperatively (Group I: DO-, N=119; Group II: DO+, N=34). The subjective symptom was assessed by international prostate symptom score (IPSS). We analyzed the factors affecting the aggravation of storage symptoms after surgery using logistic regression analysis.

Results: There was no significant difference in demographic, perioperative parameters and oncologic outcomes between the two groups. In all patients, total IPSS score (P=0.001) and voiding symptom score (P<0.001) significantly improved, but storage symptoms were aggravated at 12 months after surgery (P=0.043). There was no difference in postoperative IPSS changes between the two groups, DO appeared to be the only independent factor associated with the deterioration of the storage symptoms after surgery on multivariate analysis except the total IPSS score and voiding symptom score.

Conclusion: Preoperatively detected DO was closely associated with aggravation of storage symptoms after radical prostatectomy.

Keywords: 근치적 전립선절제술, 저장증상, 배뇨근 과활동
Introduction and Objectives: We assessed the association between metabolic health status and incidence of prostate cancer using the National Health Check-ups (NHC) database of South Korea.

Materials and Methods: A total of 11,771,252 participants who underwent health check-ups in 2009–2012 were followed. Participants were stratified based on the body mass index categories and metabolic condition: metabolically healthy, normal-weight (MHNW), metabolically obese, normal-weight (MONW), metabolically healthy, obese (MHO), metabolically obese, obese (MOO). Multivariate adjusted Cox regression analysis was conducted to examine the hazard ratio (HR) and 95% confidence interval (CI) for the association between metabolic health status and incidence of prostate cancer.

Results: Of the study participants, 6,165,051, 1,226,359, 2,312,828, and 2,067,004 subjects were classified into MHNW, MONW, MHO, and MOO group. Mean BMI was 22.2 in the NHNW group and 27.8 in MOO group. During a 5.4±1.1 years of follow-up visit, 56,552 participants were found to have prostate cancer. Multivariate adjusted HR was 1.143 at MONW group, 1.097 at MHO group, and 1.25 at MOO group, showing MONW group was higher than MHO group. Incidence rate of prostate cancer showed significant correlation for the number of components of metabolic syndrome.

Conclusions: This population-based study shows the evidence of association between metabolic health status and the incidence of prostate cancer, and the risk increased according to the number of components of metabolic syndrome.

Keywords: 전립선 암, 대사증후군, 국민건강보험공단 검진
Impact of early salvage androgen deprivation therapy on survival in non-organ confined prostate cancer after radical prostatectomy

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1국민건강보험공단 일산병원 비뇨의학과, 2연세의대 비뇨의학과

Purpose: Androgen deprivation therapy (ADT) is the one of the salvage treatment when biochemical recurrence (BCR) occurred after radical prostatectomy (RP) especially in high risk prostate cancer (PC). However, the timing of salvage ADT (sADT) was still unclear. In this study, we analyzed an efficacy of early sADT for non-organ confined PC after RP.

Materials and Methods: We retrospectively reviewed the medical records of pathologic non-organ confined PC patients (T3a,b or T4) who received sADT for BCR after RP. Patients with clinical distant metastasis, lymph node involvement proven by lymph node dissection and who received neo-adjuvant or adjuvant therapy were excluded. Univariate and multivariate Cox regression analysis for distant metastasis, PC specific survival and overall survival was performed.

Results: Total 345 patients were analyzed. The median follow up duration were 82 months. The median PSA was 10.9 ng/mL. Patients with pathologic T3b or T4 were 24.9% and with pathologic Gleason score ≥9 were 15.1%. 8 year distant metastasis free survival, PC specific survival and overall survival was 91.7%, 97.2%, 90.9%. In univariate and multivariate Cox regression analysis, sADT when PSA below 0.5 was significantly associated with distant metastasis free survival, PC specific survival and overall survival in non-organ confined PC.

Conclusions: Early sADT showed benefits for distant metastasis free survival, PC specific survival and overall survival in non-organ confined PC after RP. Further consideration should be given to early sADT in non-organ confined PC.

Keywords: 전립선암, 남성호르몬박탈요법, 근치적 전립선절제술

| Table 1: Univariate and multivariate analysis of factors associated with prostate cancer specific survival |
|----------------------------------|--------|--------|--------|--------|--------|
| variable                         | hazard ratio | p-value | hazard ratio | p-value |
| Age (median)                     | 1.22 (0.91-1.62) | 0.246 | 1.35 (1.07-1.71) | 0.011 |
| BMI (median)                     | 1.06 (0.69-1.60) | 0.802 | 1.11 (0.82-1.50) | 0.528 |
| Receive salvage ADT              | 1.25 (0.85-1.84) | 0.266 | 1.28 (0.90-1.81) | 0.156 |

| Table 2: Univariate and multivariate analysis of factors associated with overall survival |
|----------------------------------|--------|--------|--------|--------|--------|
| variable                         | hazard ratio | p-value | hazard ratio | p-value |
| PSA (median)                     | 1.114 (1.024-1.216) | 0.009 | 1.348 (1.187-1.531) | 0.005 |
| Distant metastasis by RP         | 1.005 (0.905-1.119) | 0.866 | 1.005 (0.905-1.119) | 0.866 |
| PSA (median)                     | 0.253 (0.132-0.490) | 0.000 | 0.253 (0.132-0.490) | 0.000 |

ABSTRACTS
The cumulative incidence and risk factors of postoperative inguinal hernia in patients undergoing radical prostatectomy

백승룡, 구자윤, 하홍구
부산의대 비뇨의학과

Background: The aim of this study is to investigate the cumulative incidence and risk factors of postoperative inguinal hernia (PIH) in patients undergoing radical prostatectomy, i.e., laparoscopic prostatectomy (LRP) and robot-assisted laparoscopic prostatectomy (RARP).

Methods: This study included 1124 patients who had undergone radical prostatectomy or transurethral resection of bladder tumor from 2011–2016. We compared the cumulative incidence of PIH in the radical prostatectomy groups (460; LRP 341, RARP 119) and the control group (664; transurethral resection of bladder tumor), and we then analyzed the risk factors (age, operative methods, previous abdominal operative history, thickness and width of external oblique muscle and rectus muscle, thickness of abdominal subcutaneous fat layer at Hesselbach’s triangle level, body mass index, prostate-specific antigen, operative time, specimen weight, Gleason score, and pathology T-stage) of PIH in the radical prostatectomy groups.

Results: The median follow-up period in this study was 39.6 months. In Kaplan–Meier curve analysis, the cumulative incidence of PIH was 5.3, 4.2, and 0.5% for the LRP, RARP, and control groups, respectively (p<0.001). Multiple logistic regressions showed that thickness of external oblique muscle and width of rectus muscle were significant risk factors (p<0.001 and p=0.027).

Conclusions: PIH is considered to be one of the complications of LRP and RARP. Moreover, we suggest that if the thickness of the muscle is <7.3 mm, thoughtful surgical manipulation is needed for radical prostatectomy, and care should be taken to determine whether hernia occurs during follow-up.

Keywords: 서해부탈장, 합병증, 전립선적출술
Association between positive surgical margins and biochemical recurrence in high-risk prostate cancer patients

박지훈, 박시균, 강병진, 백승룡, 김경환, 구자윤, 하홍구
부산의대 비뇨의학과학교실

Introduction: Positive surgical margins (PSM) at the time of radical prostatectomy (RP) result in an increased risk of biochemical recurrence (BCR). Some studies have shown that PSM in high-risk prostate cancer (PCa) patients are not associated with an increased risk of BCR. We conducted analysis the influence of surgical margins on BCR among patients with high-risk PCa treated with laparoscopic (LRP) and robot-assisted radical prostatectomy (RARP) by single surgeon.

Material & Methods: We retrospectively analyzed our database of 518 LRP and RARP cases performed between 2009 and 2016. Clinical, pathological and oncological outcomes were evaluated in patients fulfilling Damico’s and NCCN’s high risk characteristics. Primary endpoint was BCR, defined as two consecutive PSA values of >0.2 ng/mL after surgery. Patients with neoadjuvant or adjuvant therapy were excluded. BCR was estimated with Kaplan-Meier curves, Cox proportional hazards regression was used to estimate variables associated with BCR.

Results: We identified 446, 222 high-risk PCa patients treated with RP fulfilling Damico and NCCN guideline, respectively. The rate of positive surgical margins was 41.0%, 59.9%, respectively. With a mean follow-up of 23.3 (IQR 6.9–36.7), 18.6 (IQR 4.2–30.4) months, 30.7%, 44.6% of the patients had BCR, respectively. 5-years BCR-free survival was 36.6%, 31.4%, respectively.

Conclusions: PSM are associated with an increased risk of BCR in high-risk PCa patients under went RP.

Keywords: 전립선암, 절제변연양성, 생화학적재발

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1. NSM - negative surgical margin, 2. PSM - positive surgical margin, 3. BCR - biochemical recurrence, 4. LRP - laparoscopic radical prostatectomy, 5. RARP - robot-assisted radical prostatectomy, 6. OR - odds ratio, 7. BMI - body mass index
Cancer - Prostate P-012

전이성 호르몬 민감성 전립선암 환자에서 modified glasgow prognostic score가 종양학적 결과에 미치는 영향
이상민, 최원석, 류제만, 최세영, 김청수
서울아산병원 비뇨의학과

Introduction: There is increasing evidence that the presence of an inflammation-based prognostic score (modified Glasgow prognostic score, mGPS) is associated with survival in patients with advanced cancer. This study aimed to investigate the prognostic value of mGPS in metastatic hormone-sensitive prostate cancer (mHSPC).

Materials and Methods: A total of 154 patients who have metastatic lesion at the time of diagnosis of prostate cancer and underwent androgen deprivation therapy (ADT) were retrospectively analyzed. The mGPS was estimated based on serum C-reactive protein (CRP) and albumin levels (score 2, CRP > 1.0 mg/dl and albumin < 3.5 g/dl; score 1, CRP > 1.0 mg/dl; score 0, CRP ≤ 1.0 mg/dl). We analyzed the impact of mGPS on oncologic outcomes using the Kaplan–Meier method and Cox proportional hazard model. Median follow-up duration was 29 months.

Results: The median age of patients was 70 years and the median initial prostate-specific antigen (PSA) level was 113ng/ml. The Gleason score was 6 or 7 in 17 patients (11.0%), 8 in 55 (35.7%), and 9 or 10 in 82 (53.2%). We assessed regional node metastasis and visceral metastasis at the diagnosis in 102 patients (66.2%) and 18 (11.7%). The mGPS was as follows: 0 in 76 (49.4%), 1 in 52 (33.8%), and 2 in 26 patients (16.9%). In Kaplan–Meier analysis, patients with higher mGPS were significantly associated with shorter cancer-specific survival (CSS) and overall survival (OS) (median CSS: 140, 51, and 29 months for score 0, 1, and 2, respectively, p<0.001; and OS: 54, 39, and 24 months, respectively, p=0.03). There was no significant association between mGPS and castration-resistant prostate cancer (CRPC) free survival. In multivariate analysis, higher mGPS was an independent prognostic factor of shorter CSS (p=0.043), but not OS (p=0.432).

Conclusions: mGPS has a prognostic value for CSS in patients with mHSPC.

Keywords: Modified glasgow prognostic score, Prostate cancer, Androgen deprivation therapy

Withdrawal
Androgen deprivation therapy should not be used as monotherapy in high or very high risk localized prostate cancer

최원석, 이재훈, 최세영, 김청수
서울아산병원 비뇨의학과

Objectives: We investigated the oncologic outcomes between androgen deprivation therapy (ADT) and radical prostatectomy (RP) in high or very high risk prostate cancer.

Materials and Methods: This study included 147 ADT patients and 356 RP patients who were diagnosed with high or very high risk of National Comprehensive Cancer Network-defined guideline. Patients who underwent radiation therapy or N1 or M1 stage were excluded. The Kaplan–Meier and Cox regression analysis were used to evaluate cancer specific survival (CSS) and overall survival (OS).

Results: High risk included 276 patients and very high risk included 227 patients. ADT patients had worse characteristics of age (74.6 vs 70.8, p<0.001), comorbidity index (≧2; 31.3% vs 4.8%, p<0.001), PSA (42.1 vs 19.5, p<0.001), T stage (≧T3; 56.5% vs 42.7%, p<0.001), and Gleason score (≧8; 78.9% vs 66.0%, p<0.001). During median follow-up of 66.0 months, 5-year CSS were 90.7% of ADT and 99.7% of RP, and 5-year OS were 68.2% of ADT and 95.5% of RP. On Kaplan–Meier curve, ADT showed worse CSS (p<0.001) and OS (p<0.001) than RP in both high and very high risk patients. On multivariate analysis, Gleason score (≧9 vs ≦8; hazard ratio [HR] 2.927, p=0.0419) and treatment (RP vs ADT; HR 0.080, p=0.0001) were significant factors for CSS.

Conclusion: RP was superior therapy than ADT in high and very high risk patients. If surgery is possible, RP can help to obtain survival gain than ADT monotherapy.

Keywords: High risk prostate cancer, Radical prostatectomy, Androgen deprivation therapy
Prognostic factors for oncologic outcomes in metastatic chemotherapy-naïve castration-resistant prostate cancer with enzalutamide in real world

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**Objectives:** We evaluated the prognostic factors using easily accessible clinical variables in chemotherapy-naïve castration-resistant prostate cancer (CRPC) with enzalutamide.

**Materials and Methods:** We retrospectively reviewed patients with prostate cancer who were treated with enzalutamide before chemotherapy. We collected serum labs including PSA, testosterone, hemoglobin, platelet, neutrophil, lymphocyte, neutrophil-to-lymphocyte ratio (NLR) protein, albumin, alkaline phosphatase (ALP), and liver profiles from pre-enzalutamide to 3 months. PSA progression free survival, and overall survival were estimated by Cox regression analysis.

**Results:** A total of 113 patients enrolled. The median duration from the diagnosis to the first usage of enzalutamide was 2.0 years. At the first usage of enzalutamide, 102 (90.3%) patients had bone metastasis, 58 (51.3%) patients had lymph node metastasis, and 28 (24.8%) patients had visceral metastasis. PSA levels (160.2 ng/mL±351.5) decreased significantly after 2 months (47.4 ng/mL±117.1). The ratio of neutrophil (61.0%±11.0) decreased after 1 month (57.1%±12.5), but the ratio of lymphocyte (28.1%±10.6) increased significantly after 2 months (31.2%±9.7). ALP levels (201.86 IU/L±223.77) decreased after 2 months (148.25 IU/L±146.81). In PSA progression free survival, prior abiraterone (HR 4.136, p=0.0494), visceral metastasis (HR 3.194, p=0.0002), high NLR (HR 1.194, p=0.0158), and high ALP (HR 1.002, p=0.0205) were worse prognostic factors. In radiologic progression free survival, Gleason score (≥9 vs ≤8; HR 2.281, p=0.0247), prior abiraterone (HR 8.629, p=0.0005), and high NLR (HR 1.425, p<0.0001) were associated with worse outcomes. In overall survival, visceral metastasis (HR 3.337, p=0.0001), high NLR (HR 1.270, p=0.0001), and high ALP (HR 1.001, p=0.0032) were worse predictors.

**Conclusion:** Enzalutamide is less effective in metastatic chemotherapy-naïve CRPC patients with prior abiraterone, visceral metastasis, Gleason score (≥9), high NLR, and high ALP.

**Keywords:** Enzalutamide, Chemotherapy-naïve castration-resistant prostate cancer, Neutrophil-to-lymphocyte ratio
Docetaxel 항암화학요법 치료를 받는 거세 저항성 전립선암 환자에서 남성호르몬박탈요법의 기간이 종양학적 결과에 미치는 영향

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Introduction: We investigated whether the duration of first androgen deprivation therapy (ADT) influences oncologic outcomes in patients with castration-resistant prostate cancer (CRPC) treated with docetaxel.

Materials and Methods: 101 patients who were diagnosed with CRPC after ADT and treated with docetaxel were included for the analysis. We estimated the optimal threshold of the effective duration of ADT before diagnosis of CRPC, and the impacts of the duration of ADT on oncologic outcomes were assessed using multivariate analysis. Mean follow-up duration was 44 months.

Results: Total 74 patients (73.3%) of cohorts died during follow-up duration. Mean initial PSA was 519.3 ng/ml and Gleason scores was as follows: 6 in 2 (2.0%), 7 in 6 (5.9%), 8 in 27 (26.7%), 9 in 50 (49.5%), and 10 in 16 patients (15.8%). Median duration of ADT was 37.3 months. We considered 30 months as the proper cut-off value of the effective duration of ADT, because 30 months had the highest sensitivity and specificity (53.4% and 28.6%, respectively) to cancer progression in ROC curve. All patients were treated with docetaxel median 9 months after CRPC onset. In Kaplan-Meier analysis, 2-year progression-free survival was 44.8% in patients with ADT for below 30 months and 72.4% in patients with ADT for more than 30 months (p < 0.001). In addition, 2-year overall survival was 48.0% and 68.8% in patients with ADT for below 30 months and the others, respectively (p < 0.001). Multivariate analysis indicated that duration of ADT (≤ 30 months) was the independent prognostic factor for progression-free survival (PFS) and overall survival (OS), respectively (p < 0.001), but not for cancer-specific survival (CSS) (p = 0.082). Charson comorbidity index ≥ 1, visceral metastasis at the time of diagnosis, initial PSA > 90 ng/ml, Gleason score ≥ 9 were not shown as independent prognostic factors for PFS, CSS, and OS in multivariate analysis.

Conclusions: The effective duration of first ADT was considered significant prognostic factor for survival, CRPC patients who had poor response on first ADT are associated with poor prognosis.

Keywords: Castration-resistant prostate cancer, Androgen deprivation therapy, Docetaxel
Impact of clinical trial participation on survival in patients with castration-resistant prostate cancer: a multi-center analysis

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Background: Clinical trial (CT) participation may confer access to new, potentially active agents before their general availability. This study aimed to investigate the potential survival benefit of participation in investigational CTs of novel hormonal, chemotherapeutic, and radiopharmaceutical agents in patients with castration-resistant prostate cancer (CRPC).

Methods: This multi-center, retrospective analysis included 299 consecutive patients with newly diagnosed, non-metastatic or metastatic CRPC between September 2009 and March 2017. Of these, 65 (21.7%) patients participated in CTs pertaining to systemic treatment targeting CRPC and 234 (78.3%) patients received pre-established, standard systemic treatment outside of a CT setting. The survival advantage of CT participation regarding cancer-specific survival (CSS) was investigated.

Results: An Eastern Cooperative Oncology Group performance status (ECOG PS) ≥2 at CRPC diagnosis was found in a lower proportion CT participants than in non-participants (4.6% vs. 14.9%; p=0.033). During the median follow-up period of 16.0 months, CT participants exhibited significantly higher 2-year CSS survival rates (61.3% vs. 42.4%; p=0.003) than did non-participants. Multivariate analysis identified prostate-specific antigen and alkaline phosphatase levels at CRPC onset, Gleason score ≥8, ECOG PS ≥2, less number of docetaxel cycles administered, and non-participation in CTs as independent predictors for a lower risk of CSS.

Conclusions: Patients diagnosed with CRPC who participated in CTs exhibited longer CSS durations than non-participants who received pre-established, standard systemic therapy outside of a CT setting. Participation in CTs should be offered to patients with CRPC whenever indicated, as such participation may confer an inherent survival advantage.

Keywords: 거세저항성 전립선암, 임상시험, 생존율
Long-term outcomes of the extraperitoneal robot-assisted laparoscopic radical prostatectomy

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**Background & Purpose:** 단일기관에서 시행한 복막 외 접근법을 이용한 로봇 보조 복강경 근치적 전립선 적출술의 장기적 결과에 대하여 알아보고자 하였다.

**Materials & Methods:** 2007년 8월부터 2014년 6월까지 복막 외 접근법을 이용한 로봇 보조 복강경 근치적 전립선 적출술을 시행받은 1182명 중 1129명을 대상으로 하였으며 수술 후 평균 경과 관찰 기간은 75개월이었다.

**Results:** 평균 수술시간은 127분, 평균 console 시간은 57분이었다. 평균 실혈량은 486.96 ml, 수혈을 시행한 경우는 총 32건이었다. 전체 환자 중 65명의 환자가 신장이식수술, 다른 복부 압 수술 등의 복부 또는 골반 수술을 한 과거력이 있었으며 복막 외 접근법 시행에 큰 문제점 없이 진행 가능하였다. 직장 손상, 장 손상, 문합 부위 출혈 등의 부작용은 1.6%에서 관찰되었다. 평균 재원기간은 4일, 평균 도뇨관 유지기간은 11일이었다. 총 1129명 중 pT3~4 환자가 55.9%였으며, pT2 환자 중 23.1%에서 수술 절제면 양성이었다.

**Conclusion:** 복막 외 접근법을 이용한 로봇 보조 복강경 근치적 전립선 적출술은 안전하고 효과적인 방법이며 특히 이전에 복부 또는 골반 수술을 한 환자에게서 유용할 것으로 생각한다.

**Keywords:** 복막 외 접근법, 로봇, 전립선 암
Optimal sequencing strategy using docetaxel and androgen receptor axis-targeted agents in patients with castration-resistant prostate cancer: utilization of neutrophil-to-lymphocyte ratio

Objectives: To investigate the prognostic value of neutrophil-to-lymphocyte ratio (NLR) for the selection of the optimal sequencing strategy using docetaxel and androgen receptor axis-targeted (ARAT) agents in patients with castration-resistant prostate cancer (CRPC). Currently, there is a need to identify biomarkers to guide optimal sequential treatment in CRPC.

Materials and Methods: This multi-center, retrospective analysis included 303 consecutive patients initially diagnosed with CRPC between September 2009 and March 2017. Of these, 52 (17.2%) patients received pre-docetaxel ARAT agents and 189 (62.4%) patients received post-docetaxel ARAT agents. The prognostic ability of NLR at CRPC diagnosis regarding radiographic progression-free survival (RFS) and cancer-specific survival (CSS) were investigated. For the analysis, the NLR level was dichotomized at 2.5, and evaluated according to sequencing strategy.

Results: Multivariate analysis revealed NLR ≥2.5 as independent predictors of a lower risk for CSS. During the median follow-up of 16.0 months, patients with NLR ≥2.5 exhibited significantly lower 1-year RFS (p=0.007) and 2-year CSS rates (p=0.003) compared to patients with NLR <2.5. Among patients with NLR <2.5, the post-docetaxel ARAT agent sequencing group exhibited higher 1-year RFS (p=0.042) and 2-year CSS (p=0.006) rates compared to the pre-docetaxel ARAT agent sequencing group. Among patients with NLR ≥2.5, RFS and CSS rates were comparable regardless of ARAT agent sequencing.

Conclusion: NLR ≥2.5 at CRPC diagnosis is associated with a lower risk for CSS. Patients with NLR <2.5 should primarily be offered docetaxel considering the survival benefit of docetaxel-to-ARAT agent sequencing.

Keywords: 거세저항성 전립선암, 림프구, 생존율, 호중구
Comparison of hypoechoic lesion-targeted biopsy vs magnetic resonance imaging-cognitive targeted biopsy for prostate cancer detection

허지은1,2, 정재용1,2, 김진우1,2, 전진형1,2, 구교철2, 정병하2, 이광석2
연세의대 1세브란스병원 비뇨의학과, 2강남세브란스병원 비뇨의학과

**Purpose:** To compare prostate cancer detection ability and pathologic outcomes between hypoechoic lesion–targeted biopsy (HL–TBx) and cognitive magnetic resonance imaging–targeted biopsy (MRI–TBx) in patients with suspected prostate cancer.

**Methods:** From September 2014 to August 2016, 193 patients with prostate-specific antigen (PSA) level 3–10 ng/ml underwent MRI–TBx or HL–TBx. Hypoechoic lesions were selected by a MRI–TBx experienced urologist. We compared cancer detection rates and pathologic outcomes before and after propensity–score matching.

**Results:** The cancer detection rates based on a same number of total biopsy cores were 40.8% and 43.8% in HL–TBx and MRI–TBx, respectively (P=0.683). The volume per core ratio was a predicting factor for prostate cancer in patients with previous negative biopsy. After propensity–score matching, although detection rate of systematic biopsy did not differ, the positive target lesion rate was higher in the MRI–TBx group compared to that in the HL–TBx group (30.5% vs 43.9%, P=0.016). There was no difference in the proportion of significant prostate cancers between two groups (P=0.816).

**Conclusions:** Regarding low predictive ability for prostate cancer in HL–TBx, the comparable detection rate in HL–TBx and MRI–TBx may be due to a similarity in the total number of biopsy cores. Thus, identifying the optimal number of biopsy cores is feasible in patients with previous negative prostate biopsy without regard to presence of hypoechoic lesion.

**Keywords:** Magnetic resonance imaging, Prostate biopsy, Transrectal ultrasound
골반 림프절 절제술이 고위험 전립선암의 중앙학적 결과에 미치는 영향

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목적: 본 연구의 목적은 고위험 전립선암 환자에서 골반 림프절 절제술(PLND)이 환자의 생존률 및 생화학적 재발(biochemical recurrence, BCR)에 미치는 영향을 평가하기 위함이다.

대상 및 방법: 1995년 3월부터 2014년 12월까지 본원에서 고위험 전립선암으로 전립선절제술을 받은 1624명의 환자의 의무기록을 검토하였다. 그 중에서 수술 전에 호르몬 치료를 받았거나, PLND의 범위 등과 같은 임상정보가 부족하거나, 추적 관찰 기간이 1년 미만인 428명의 환자는 제외하였다. 최종적으로 1196명의 환자가 본 연구에 포함되었으며, 이들 환자는 no PLND, limited PLND (iPLND) 및 extended PLND (ePLND) 3개의 군으로 나누었다. 환자군들 사이의 선택 편향 문제를 보정하기 위해서 술 전 PSA, 생검 글리슨 점수, 임상적 T 병기, 병리학적 글리슨 점수 및 양성 절제면을 대상으로 propensity score matching을 하여 분석을 하였다. Kaplan–Meier curve를 이용하여 세 군 사이의 overall survival (OS), cancer–specific survival (CSS) 및 BCR–free survival (BCRFS)을 비교하였으며, Cox 회귀 모델을 이용하여 이들과 관련된 인자들을 확인하였다.

결과: 1196명의 환자 중 iPLND 군과 ePLND 군에는 각각 350명의 환자가 포함되었다. PLND는 전립선절제술 후 생존률 및 생화학적 재발율을 크게 향상시킬 수 있는 것으로 보인다. Propensity score matching을 하여 정리한 결과, 1년 OS (81.4% vs 74.1% vs 81.1%, p=0.625), CSS (88.2% vs 83.7% vs 84.3%, p=0.781) 및 BCRFS (36.5% vs 49.7% vs 49.8%, p=0.144)에는 유의한 차이가 없었다. 다변량 분석에서 연령은 OS (HR=1.077, p=0.0075)와 관련이 있었고, GS는 CSS (HR=5.028, p=0.009)와 관련이 있었다. 하지만 ePLND는 술전 PSA, 병리학적 글리슨 점수 및 T 병기와 양성 절제면에 특히 BCRFS에 관련이 있는 것으로 나타났다.

결론: PLND는 고위험 전립선암 환자에서 OS와 CSS에는 영향을 미치지 못하는 것으로 보인다. 하지만 extended PLND는 BCRFS를 향상시킬 수 있는 것으로 판단된다.

Keywords: 전립선암, 골반 림프절 절제술
전이성 전립선암 환자에서 원발암에 대한 국소치료로서의 전립선 절제술과 방사선 치료의 종양학적 결과 비교

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목적: 본 연구는 진단 당시 전이가 있었던 전립선암 환자에서 원발부위에 대한 국소치료로서의 전립선 절제술(radical prostatectomy, RP)와 방사선 치료(radiotherapy, RT)의 종양학적 결과를 비교하고자 한다.

대상 및 방법: 본 기관에서 2005년 11월부터 2014년 12월까지 전이성 전립선암으로 진단 받은 환자의 의부기록을 검토하여 RT를 받은 환자 52명과 RP를 받은 환자 56명을 확인하였다. 이들을 대상으로 overall survival (OS), cancer-specific survival (CSS) 및 progression–free survival (PFS)을 확인하였다. PFS는 진단된 시점부터 암이 진행 혹은 재발하거나 모든 이유로 사망했을 때까지의 기간으로 정의하였다. RP 군과 RT 군 사이의 OS, CSS, 그리고 PFS를 Kaplan–Meier curve를 이용하여 비교하였고, OS, CSS 및 PFS와 관련이 있는 인자를 Cox regression model을 이용하여 확인하였다.

결과: 방사선 치료를 받은 환자들은 고식적 방사선 치료 혹은 저분할 방사선치료를 받았으며, 평균적으로 60 Gy의 방사선량으로 치료 받았다. RT 군에서 진단 전 PSA가 더 높았고 biopsy Gleason score가 더 높았으며, 전이 병변의 개수가 더 많았다. 수술적인 처치가 필요한 요로 합병증의 비율은 두 군 사이에 유의한 차이가 없는 것으로 나타났다. 5년 OS (65.2% vs 55.9%, p=0.159) 및 CSS (71.4% vs 62.5%, p=0.105) 역시 두 군 사이에 유의한 차이가 없었다. 다변량 분석에서 전이 병변이 6개 이상인 경우에 OS (HR=1.811, p=0.042) 및 PFS (HR=1.745, p=0.033)는 더 좋지 않은 것으로 나타났다. CSS와 관련이 있는 인자로는 전이 병변의 개수(HR=2.359, p=0.009) 외에 Charlson–comorbidity index (HR=2.056, p=0.027)가 더 나아진 것으로 나타났다. 전립선 절제술이나 방사선치료 여부는 OS (HR=1.500, p=0.164) 및 CSS (HR=1.553, p=0.173) 외에 PFS (HR=1.056, p=0.831) 모두에서 연관이 없는 것으로 나타났다.

결론: 전이성 전립선암 환자에서 전이 병변이 5개 이하인 경우 OS, CSS 및 PFS가 더 높은 것으로 나타났다. 환자가 원발암에 대한 국소치료로 전립선 절제술이나 방사선 치료를 받았는지 여부는 OS, CSS 및 PFS에 영향을 끼치지 않는다.

Keywords: 전이성 전립선암, 전립선 절제술, 방사선치료
Concurrent validation of a robotic simulator curriculum focused on “core” exercises: does it help overcome baseline skill levels?

장재윤, 장준보, 최재영, 송필현, 문기학, 정희창, 고영휘
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Objectives: The current da Vinci virtual simulator provides 12 exercises in the endowrist manipulation and needle driving categories. Among these, the time spent for the six time-consuming exercises was an independent predictor of console time. Utilizing these as “core” exercises, we developed a simulator curriculum and validated its efficacy.

Methods: This study was conducted in three phases: 1) single-session simulator phase, to assess the baseline skill level by completing whole nine exercises in the endowrist manipulation category; 2) repeated simulator phase, to improve skills by performing six preselected exercises sequentially until the score reached over 80%; and 3) single-session hands-on phase simulating urethrovesical anastomosis, measuring the final robotic proficiency by a console time for complete coaptation.

Results: Among 47 recruited, 30 completed curriculums. Based on the ratio between total scores and times in phase 1, trainees were divided equally into three baseline skill groups (skillful vs. moderate vs. poor), differing significantly both in score (p=.001) and time (19.88 vs. 26.96 vs. 35.51 minutes, p<.001). These differences were marginally maintained in total time for phase 2 (124.3 vs. 126.5 vs. 176.5 minutes, p=.059) but disappeared in console time for phase 3 (18.9 vs. 17.9 vs. 22.7 minutes, p=.085). In multivariable analysis for console time, none of the variables in phase 1 had a significant association, but total time for phase 2 was a single predictor.

Conclusions: Despite distinct differences in baseline skill levels among the novice trainees, similar surgical proficiency could be achieved using repeated simulator training, focused on core exercises.

Keywords: 전립선암, 로봇수술, 로봇시뮬레이터
Cancer - Prostate P-023

Prediction of MRI PI-RADS™ version 2 score in prostate extracapsular extension in radical prostatectomy

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울산대학교 서울아산병원 비뇨의학과

Objectives: Prediction of pT3 disease is crucial to plan nerve sparing and to achieve negative surgical margin in radical prostatectomy. PI-RADS™ version 2 improves and standardizes communication between radiologists and urologists to detect or exclude the presence of significant prostate cancer with a high likelihood. However, few studies have examined the predictive power of PI-RADS™ version 2 with histologic findings. We analyzed patients who underwent radical prostatectomy for prostate cancer who were evaluated with MRI preoperatively.

Materials and Methods: We investigated the association between MRI PI-RADS™ version 2 interpretation of extracapsular extension and pathologic result using multivariate Cox regression and predictive value calculation. In this study, pathologic extracapsular extension was the gold standard for MRI prediction.

Results: 102 patients who received prostatectomy with preoperative MRI with PI-RADS™ version 2 interpretation were evaluated retrospectively from 2017 January to Jun. Among them, 32 (31.3%) patients had pathologic ECE(extracapsular extension) and 6 patients (18.7%) had seminal vesicle invasion. There were no statistical differences in prostate volume, Gleason score, and preoperative PSA between the two groups. The pathologic ECE group had a higher number of patients with a high Gleason score of 7(4+3) or higher, and the tumor volume was relatively larger than the non-ECE group (4.6 cm³ vs 2.5 cm³ p<0.001). Prostate lesions were divided into 12 sections according to PI-RADS™ version 2 and the predictive power was analyzed for each region. Overall, the sensitivity of PI-RADS™ version 2 to predict the extracapsular extension was 47.8% and the specificity was 97.1%. Positive predictive value was 43.7% and negative predictive value was 96.9%. The logistic regression analysis showed that biopsy Gleason score of 8 or more and PI-RADS™ version 2 were significant when ECE predictors were analyzed.

Conclusion: Prediction of extracapsular extension with MRI PI-RADS™ version 2 shows low sensitivity and high specificity. MRI PI-RADS™ version 2 analysis has a high negative predictive value for extracapsular extension. If there is no extracapsular extension in MRI PI-RADS™ version 2, neurovascular sparing surgery can be performed safely.

Keywords: Prostate cancer, Extracapsular extension, MRI PI-RADS™ version 2
Retrospective analysis of the concordance of 20 immunohistochemical tissue markers in metastasectomy lesions in patients with metastatic renal cell carcinoma

Min young Yoon¹, Sung Han Kim¹, Weon Seo Park², Eun Young Park³, Jungnam Joo³, Yoon Seok Suh¹, Jinsoo Chung¹

Departments of ¹Urology, ²Pathology, Prostate Cancer Center, National Cancer Center, Goyang, ³Biometrics Branch, Research institute and National Cancer Center, Goyang, Korea

Introduction & Objectives: Renal cell carcinoma (RCC) is a heterogenous and multicentric cancer that confers poor survival once it progresses to metastases. The standard therapy for metastatic RCC (mRCC) is systemic targeted therapy, which has differential therapeutic responses according to the metastatic lesions and organs. This study was aimed at characterizing the different expressions of 20 tissue markers in multiple metastatic lesions and organs in patients with mRCC.

Materials & Methods: A total of 66 patients' 179 metastasectomy tissue lesions (MTLs) were stained immunohistochemically using 20 tissue markers: BAP1; CD31; CD 34; HIF-1α and -2α; Ki-67; pS6; PBRM1; PDGFRα and β; PD-L1; PSMA; PTEN; α-SMA; TGFα2; VEGFR-1, -2, and -3; VHL loss; and CA9. The cases were identified pathologically using the semi-quantitative H-score (0-300) to examine the concordance rate of the expressions of markers between different organs, and different sites of the same organ. The concordance rate was calculated as the number of patients with concordant intensity score out of the total number of patients in that comparison.

Results: Forty-two patients (44 cases) with 96 MTLs and 39 with 83 MTLs were used to examine the concordance of the markers within the same and different organs, respectively. Among 179 MTLs, 84 from the kidneys, 43 from the lungs, 43 from the brain, 5 from the lymph nodes (LNs), and 15 from other organs were stained with tissue markers. Within the same organs, the BAP1, PSMA, VEGFR3, PDGFRα (>0.9 concordance rate), PS6, HIF-2 (>0.8 concordance rate), PD-L1, and HIF-1 (>0.7 concordance rate) exhibited highly concordant expressions, even though they originated from different MTLs. As for the expression of different metastatic organs in the same patient, BAP1, PSMA, VEGFR3 (>0.9 concordance rate), PDGFRα, SMA (>0.8 concordance rate), PS6, PD-L1, and PTEN (>0.7 concordance rate) showed consistent results, despite being obtained from different organs. For 26 patients who exhibited recurrence within the same organ, the tissue samples were re-stained for the markers, and MTLs were analyzed to examine the concordance of the recurrent site within the same organ. BAP1, PSMA (>0.9 concordance rate), PS6, VEGFR3, PDGFRα (>0.8 concordance rate), PTEN, and HIF-2 (>0.7 concordance rate) showed concordance. However, there was a limitation in that the distribution of some of the high concordant markers had shifted to one side.

Conclusion: The high-concordance tissue markers, including BAP1, VEGFR3, PDGFRα, and PSMA (PS6: concordance rate >0.7), showed a similar expression of markers regardless of metastatic organs, metastatic sites, or recurrence, whereas other markers were influenced by other factors.

Keywords: Renal cell carcinoma, Metastasis, Marker, Tissue, Immunohistochemistry, Correlation
Adjuvant chemotherapy for locally advanced muscle-invasive bladder cancer: systematic review and meta-analysis of randomized clinical trials

Do Kyung Kim¹, Joo Yong Lee¹, Jae Hung Jung², Yoon Soo Ha¹, Kyo Chul Koo¹, Kwang Suk Lee¹, Byung Ha Chung¹, Kang Su Cho¹

¹Department of Urology, Yonsei University College of Medicine, ²Department of Urology, Yonsei University Wonju College of Medicine

Background: Although adjuvant chemotherapy (ACH) is commonly used in clinical practice for the management of locally advanced muscle-invasive bladder cancer (MIBC), the role of ACH is still poorly defined for the management of locally advanced MIBC. We aimed to systematically evaluate the effect of ACH for improving survival outcomes in patients with locally advanced MIBC treated with radical cystectomy (RC).

Methods: A comprehensive literature search was conducted in the PubMed, Embase for all articles published until February 2018 on the basis of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The eligibility of study was defined by the Population, Intervention, Comparator, Outcome, and Study design system (PICOS). The study end-points were overall survival (OS) and progression-free survival (PFS). A meta-analysis was conducted by pooling the studies that compared RC with ACH and RC alone, and the results are presented as a pooled hazard ratio (HR) with a 95% confidence interval (CI).

Results: The five randomized controlled trials (RCT) with 632 patients ultimately selected for the current analysis. All studies evaluated the effects of ACH on locally advanced MIBC patients. For OS, the pooled HR across all five trials was 0.73 (95% CI, 0.55–0.97; p=0.0006). For PFS, the pooled HR across five trials reporting this outcome was 0.47 (95% CI, 0.31–0.72; p<0.00001).

Conclusions: ACH following RC for locally advanced MIBC may therefore contribute to improved OS and PFS.

Keywords: 방광암, 화학요법, 방광전절제술
A systematic review and meta-analysis for neoadjuvant chemotherapy for upper tract urothelial carcinoma

Do Kyung Kim\(^1\), Joo Yong Lee\(^1\), Jae Hung Jung\(^2\), Yoon Soo Ha\(^1\), Kyo Chul Koo\(^1\), Kwang Suk Lee\(^1\), Byung Ha Chung\(^1\), Kang Su Cho\(^1\)

\(^1\)Department of Urology, Yonsei University College of Medicine, \(^2\)Department of Urology, Yonsei University Wonju College of Medicine

**Background:** Upper urinary tract urothelial carcinoma (UTUC) is comparatively uncommon. Although some studies suggest a survival benefit of neoadjuvant chemotherapy (NAC), the role of NAC remain controversial for the management of upper tract urothelial carcinoma (UTUC). The aim of present study was to perform a systematic review and meta-analysis of currently available evidence to evaluate the contemporary role of NAC for patients with UTUC.

**Methods:** Systematic literature searches were conducted in PubMed/medline and Embase in February 2018. All studies examined the role of chemotherapy for UTUC. We performed this study according to the Preferred Reported Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. Endpoints were overall survival (OS), cancer-specific survival (CSS) and Progression-free survival (PFS). Effect measures for the endpoints were hazard ratios (HRs) and 95% confidence intervals (CIs), which were extracted from included studies.

**Results:** A total of 5 trials with 532 patients were included in this study. Included studies were all retrospective studies. Compared with the control, NAC could improve OS, CSS and PFS by 51% (HR 0.49, 95% CI 0.36-0.66), 61% (HR 0.39, 95% CI 0.27-0.58) and 52% (HR 0.48, 95% CI 0.37-0.61), respectively.

**Conclusions:** Preoperative chemotherapy might provide better survival outcomes in patients with UTUC.

**Keywords:** 상부요로상피암, 술전 화학요법, 콩팥요관절제술
Do patients benefit from total intracorporeal robotic radical cystectomy?

Jonghyun Tae1, Ji Sung Shim1, Tae Gyun Kwon2, Koon Ho Rha3, Young Goo Lee4, Ji Youl Lee5, Byong Chang Jeong6, Jae Yoon Kim1, Jong Hyun Pyun1, Sung Gu Kang1, Seok Ho Kang1

1고려의대 비뇨의학과, 2경북의대 비뇨의학과, 3연세의대 비뇨의학과, 4한림의대 비뇨의학과, 5가톨릭의대 비뇨의학과, 6성균관의대 비뇨의학과

Objectives: To compare perioperative parameters, complications and oncologic outcomes between robot-assisted radical cystectomy (RARC) with extracorporeal urinary diversion (ECUD) and intracorporeal urinary diversion (ICUD).

Methods: Between 2007 and 2017, 362 patients who underwent RARC with ECUD or ICUD at multi tertiary referral institutions in Korea were assessed. Descriptive statistics were used to summarize demographic and perioperative variables. In addition, we analyzed complications, various oncologic outcomes and estimated recurrence-free survival (RFS) using the Kaplan–Meier method.

Results: According to perioperative outcomes, the ICUD group had a significantly longer operation time (P=0.002) while recovery parameters, such as time to flatus, oral intake, and length of hospital stay, were significantly shorter in the ICUD group than in the ECUD group (P<0.001, P<0.001, and P<0.001, respectively). In the analysis of complication type, the ICUD group showed trend of decreasing in gastrointestinal and procedure related complication (P=0.008 and P=0.029, respectively). There was no difference in oncologic outcomes such as the positive margin rate (P=0.944) and the short-term RFS (P=0.496) as well as recurrence pattern between the two groups.

Conclusions: The results of this multi-institutional cohort demonstrate the benefits of using an ICUD approach, as indicated by recovery parameters and gastrointestinal complications while maintaining similar oncological results compared with ECUD.

Keywords: Bladder cancer, Outcomes, Recurrence, Radical cystectomy, Urinary diversion

<table>
<thead>
<tr>
<th>Table 1. Baseline characteristics of patients and perioperative parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Age (yr) mean ± SD</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Previous abdominopelvic surgery, no. (%)</td>
</tr>
<tr>
<td>Positive preoperative chemotherapy, no. (%)</td>
</tr>
<tr>
<td>Type of preoperative diversion, no. (%)</td>
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<tr>
<td>Neutrophil CD13</td>
</tr>
<tr>
<td>Serum albumin (g/dL)</td>
</tr>
<tr>
<td>Type of PN (%)</td>
</tr>
<tr>
<td>Perioperative outcomes</td>
</tr>
<tr>
<td>Mean console time (min)</td>
</tr>
<tr>
<td>Transfusion (ratio)</td>
</tr>
<tr>
<td>Mean time to first food (h)</td>
</tr>
<tr>
<td>Mean time to oral intake (h)</td>
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<tr>
<td>Mean time to flatus removal (h)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. Overall 90-day complications defined by a modified Clavien system (Grade 1–5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
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</tbody>
</table>

< 0.05, *P < 0.01, **P < 0.001, N=362
The impact of waist circumference difference on the risk of bladder cancer: a nationwide cohort study

최진봉, 홍성후, 하유신
가톨릭의대 비뇨의학과

Objective: We estimated the impact of waist circumference (WC) on the risk of developing bladder cancer according to body mass index (BMI) using nationally representative data from the National Health Insurance System (NHIS).

Materials and Methods: Of the 45,850,458 people who underwent at least one health examination from 2009 to 2012, 23,308,825 individuals with no previous diagnosis of bladder cancer were followed from January 2009 to December 2015. Multiple Cox regression analysis was conducted to determine the hazard ratio (HR) and 95% confidence interval (CI) for the association between bladder cancer and obesity.

Results: Significant upward trends in the risk of bladder cancer were seen with increasing BMI and WC in a multivariate-adjusted model (p < 0.001). However, the association between BMI and bladder cancer in males varied when stratified by WC. In the group with WC < 90 cm, the HR for bladder cancer decreased as BMI increased beyond the reference BMI. On the contrary, the HR for bladder cancer increased as BMI increased in the group with WC ≥ 90 cm. Similar associations between BMI and bladder cancer development were observed in females between the groups with WC ≥ 85 cm and WC < 85 cm.

Conclusions: This population-based study showed that increasing BMI and WC increased the risk of developing bladder cancer independent of confounding variables. The associations between BMI and bladder cancer development were varied, however, according to the WC category.

Keywords: 방광암, 허리둘레, 신체질량지수

*Table 1: Age- and multivariable-adjusted hazard ratios for bladder cancer according to body mass index and waist circumferences in males

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>WC (cm)</th>
<th>Event</th>
<th>Person-years</th>
<th>Incidence*</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 18.3</td>
<td>WC &lt; 80</td>
<td>1,462,987.57</td>
<td>0.38</td>
<td>0.40 (0.38, 0.43)</td>
<td>0.81 (0.80, 0.82)</td>
<td></td>
</tr>
<tr>
<td>≥ 18.3</td>
<td>WC ≥ 80</td>
<td>3,388.44</td>
<td>1.75</td>
<td>1.95 (0.98, 3.90)</td>
<td>1.99 (0.96, 3.80)</td>
<td></td>
</tr>
</tbody>
</table>

*Adjusted for age, diabetes, smoking status, exercise, and alcohol consumption

*Table 2: Age- and multivariable-adjusted hazard ratios for bladder cancer according to body mass index and waist circumferences in females

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>WC (cm)</th>
<th>Event</th>
<th>Person-years</th>
<th>Incidence*</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 18.3</td>
<td>WC &lt; 80</td>
<td>1,455,873.79</td>
<td>0.03</td>
<td>0.08 (0.08, 0.10)</td>
<td>0.07 (0.07, 0.11)</td>
<td></td>
</tr>
<tr>
<td>≥ 18.3</td>
<td>WC ≥ 80</td>
<td>2,477.99</td>
<td>0.18</td>
<td>0.70 (0.59, 0.83)</td>
<td>0.79 (0.59, 0.99)</td>
<td></td>
</tr>
</tbody>
</table>

*Adjusted for age, diabetes, smoking status, exercise, and alcohol consumption

*Adjusted for age, diabetes, smoking status, exercise, and alcohol consumption
Safty of the robot-assisted partial nephrectomy without cortical renorrhaphy

목적: 부분 신절제술 시 신장 조직을 봉합하는 과정에서 봉합소에 깔리게 되는 신장조직은 혈류공급이 감소하여 허혈 손상이 발생하여 신기능 감소방 위험성이 있다. 저자들은 신기능을 최대한 보존하기 위한 방법으로, 로봇부분신절제술 시 종양 전체 후 신장 수질분 봉합하고 피질 봉합을 생략하는 방법을 시도하여 그 안전성을 확인하였다.

대상 및 방법: 2016년 12월부터 2017년 11월까지 본원에서 신중앙으로 단일 술자에 의한 신장피질 봉합을 생략한 로봇부분신절제술 시행받은 38명을 수질 단독 봉합(군1, 24명) 과 수질 봉합 후 2차적인 피질 봉합을 시행한 군(군2, 14명)으로 나누어 병리학적 결과, 부작용 등에 대하여 후향적으로 조사하였다.

결과: 수질 봉합 이후 재관류 시 출혈을 보여 피질 봉합을 시행한 것(군2)은 14례(36.8%)이었고, 수술 후 요누출은 관찰되지 않았다. 술 전 각 군의 차이는 다음과 같다(표 1). R.E.N.A.L. Nephrometry score 는 1군에서 저위험군과 중등도 위험군, 고위험군이 각각 9명(37.5%), 14명(58.3%) 및 1명(4.2%)이었으며, 2군에서는 각각 2명(14.3%), 11명(78.6%) 및 1명(7.1%)으로 유의한 차이를 보였다(p=0.027). 종양의 직경은 1군 및 2군에서 각각 3.4±1.5 cm 및 3.7±1.0 cm으로 유의한 차이를 보이지 않았으며(p=0.177) 이었으며, 콘솔시간은 1군 및 2군에서 각각 93.8±25.3분 및 101.5±26.1분으로 나타났다(p=0.938). 수술 중 혈상시간은 1군 및 2군에서 각각 20.7±4.6분 및 21.3±4.2분이었다(p=0.085). 출혈로 인한 수혈은 1군에서 1례(4.2%)로 혈관색전술을 시행하였으며, 2군에서 1례(7.1%)로 수술 중 수혈이 시행되었다.

결론: 신장피질 봉합을 생략한 로봇부분신절제술은 안전하게 시행이 가능하였다. 향후 중앙 방법에 따른 수술 전/후 용적 및 신기능의 변화에 대한 추가 연구가 필요할 것으로 생각된다.

Keywords: Enal cell carcinoma, Robot-assisted partial nephrectomy, Cortical renorrhaphy

<table>
<thead>
<tr>
<th>Table 1. The demographic data on 38 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No.</strong></td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Mean age (years)</td>
</tr>
<tr>
<td>No. male (%)</td>
</tr>
<tr>
<td>No. left side (%)</td>
</tr>
<tr>
<td>Mean BMI, kg/m²</td>
</tr>
<tr>
<td>RENAL (%)</td>
</tr>
<tr>
<td>RENAL (%)</td>
</tr>
<tr>
<td>No. preoperative renal insufficiency (%)</td>
</tr>
<tr>
<td>Tumor diameter (cm)</td>
</tr>
<tr>
<td>Tumor volume (cm³)</td>
</tr>
<tr>
<td>Neovascularity, median (range)</td>
</tr>
<tr>
<td>Low (4.4-12.5 cm)</td>
</tr>
<tr>
<td>Intermediate (12.6-25 cm)</td>
</tr>
<tr>
<td>High (25-12 cm)</td>
</tr>
<tr>
<td>No. renal papillae (%)</td>
</tr>
<tr>
<td>No. positive surgical margins (%)</td>
</tr>
<tr>
<td>Tumor stage (%)</td>
</tr>
<tr>
<td>pT3a</td>
</tr>
<tr>
<td>pT3b</td>
</tr>
<tr>
<td>Fuhrman grade</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

* No cases: not reported

<table>
<thead>
<tr>
<th>Table 2. Surgical intervention result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median iliac vein (m)</td>
</tr>
<tr>
<td>Mean warm ischemia time (min)</td>
</tr>
<tr>
<td>No. over 30 min (%)</td>
</tr>
</tbody>
</table>
Metabolically unhealthy condition makes more bladder cancer: analysis from the National Health check-up database in Korea

김종욱, 정형국, 이동현, 안순태, 오미미, 문두건, 박홍석
고려대학교 구로병원 비뇨의학과

Introduction and Objectives: It is unknown whether bladder cancer risk differs between metabolically healthy and metabolically unhealthy normal weight men. We assessed the association between metabolic health status and incidence of bladder cancer using the National Health Check-ups (NHC) database of South Korea.

Materials and Methods: A total of 11,781,768 men who participated in NHC between 2009 and 2012 and 17,777 men who were newly diagnosed with prostate cancer were analyzed. Normal-weight and obesity were defined as BMI \(< 25 \text{ kg/m}^2\) and \(\geq 25 \text{ kg/m}^2\), respectively. Metabolic obesity was defined as the presence \(\geq 3\) components of the metabolic syndrome. Participants were stratified into 4 groups: metabolically healthy, normal-weight (MHNW), metabolically obese, normal-weight (MONW), metabolically healthy, obese (MHO), metabolically obese, obese (MOO). Multivariate Cox regression analysis was performed to examine the relationship between metabolic health status and incidence of bladder cancer.

Results: Of the study participants, 6,169,451, 1,228,925, 2,313,991, and 2,069,401 subjects were classified into MHNW, MONW, MHO, and MOO group. The mean body mass index (BMI) was 22.2 kg/m^2 in the MHNW group and 27.8 kg/m^2 in MOO group. When analyzed according to metabolic health status classification, age-adjusted HR was 1.187 at MONW group, 1.024 at MHO group, and 1.271 at MOO group, showing the HR for the MONW group was higher than that for the MHO group. As the number of metabolic syndrome components increased, HR increased significantly.

Conclusions: This population-based nationwide study revealed an association between metabolic health status and the incidence of bladder cancer, and the risk increased according to the number of components of the metabolic syndrome.

Keywords: 방광암, 대사증후군, 국민건강보험공단 검진
Prognostic value of preoperative pyuria in upper urinary tract urothelial cell carcinoma

전병조1, 태범식1, 최훈1, 배재현1, 김종욱2, 박홍석2, 박재영1
고려대학교 1안산병원 비뇨의학과, 2구로병원 비뇨의학과

Objective: To evaluate the efficacy of preoperative pyuria as a prognostic factor in patients with upper tract urothelial cell carcinoma (UTUC) undergoing surgery.

Methods: We retrospectively reviewed the medical records of patients treated from October 2003 to December 2016 at Korea University Hospital who were diagnosed with UTUC. Pyuria was defined as urine containing $\geq 5$ white blood cells per high power field. The clinicopathologic features of the pyuria group and non-pyuria group were compared using $\chi^2$ tests for categorical variables. Thereafter, we used stepwise multivariate Cox regression models stratified by the study to assess the independent effects of the prognostic factors in and estimated hazard ratios (HRs) from the Cox models.

Results: We investigated a total of 176 patients who were diagnosed with UTUC; of them, 91 (51.7%) had pyuria. There were no significant differences in the baseline characteristics between the pyuria and non-pyuria groups. However, there was a significant difference in the intravesical recurrence between the two groups. In the multivariate analysis, high-grade tumor (HR, 1.865; $p=0.037$), diabetes mellitus (DM) (HR, 2.056; $p=0.022$), lymphovascular invasion (LVI) (HR, 2.620; $p=0.019$), and preoperative pyuria (HR, 3.504; $p=0.001$) were revealed as independent risk factors for intravesical recurrence.

Conclusion: Preoperative pyuria is significantly associated with intravesical recurrence in patients with UTUC undergoing surgery. Further, high-grade tumor, DM, and LVI are also the independent prognostic factors for such patients.

Keywords: Pyuria, Carcinoma, Transitional cell, Urinary tract, Recurrence, Prognosis
Robot-assisted radical cystectomy (RARC): robot naïve surgeon 10 years experience with the 118 cases focused on total intracorporeal urinary diversion technique

윤성규, 진현중, 태종현, 김재윤, 심자성, 강성구, 천 준, 이정구, 김제종, 강석호
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Objective: The aim of study is to present learning curve of the RARC in bladder cancer patients by a robot naïve surgeon.

Patients and Methods: We identified 118 consecutive patients who underwent RARC between August 2007 and October 2017 and the learning curve was assessed by trends across the cohort chronologically. By utilizing a prospectively maintained robotic cystectomy database, data were collected on patients demographics, peri-operative clinical outcomes as well as oncologic outcomes. The primary end points included change of perioperative clinical parameters and complication rates. The secondary outcomes were evaluated on sectional time interval by procedure.

Results: The mean follow up period was 35±31 months. Sequential case number was associated with shorter overall operation time and specific procedural time (RARC with LND and intracorporeal neobladder formation). The mean number of LNs retrieving was gradually increased while the length of hospital stay trended down through serial cases. The positive margin was reported in one case and complication rates (total, early or late) did not show statistically differences through serial cases.

Conclusions: RARC with urinary diversion is a complex procedure, but it can be performed safely without compromising peri-operative outcomes and complications as well as oncologic results by robot naïve surgeon. Especially, intracorporeal neobladder formation which is the most particular part of total intracorporeal urinary diversion could be overcomed an acceptable level of proficiency within several cases.

Keywords: Bladder cancer, Cystectomy, Learning curve, Robot
Prognostic indicator for pulmonary metastasis in renal cell carcinoma patients underwent radical nephrectomy

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Purpose: The aim of this article is to validate the prognostic indicator of pulmonary metastasis in renal cell carcinoma patients treated with nephrectomy.

Materials and Methods: We investigated the data of 356 patients underwent nephrectomy and divided them into the 2 groups according to the status of pulmonary metastasis, and we investigated risk factor to pulmonary metastasis in all patients. In subgroup analysis, we also performed to verify risk factor in patients with pulmonary nodules using univariate and multivariate logistic regression analysis. The status of pulmonary nodules and pulmonary metastasis were confirmed through preoperative chest radiography by two radiologists.

Results: The pulmonary metastasis was observed in 19 (5.3%) patients and median follow-up was 47.4 months (interquartile range: 30.8-65.5). Patients with pulmonary nodules showed significantly worse the rate of pulmonary metastasis than those without pulmonary nodules (19.4% vs. 2.4%, P<0.001). In multivariate analysis, age and the presence of pulmonary nodules were independent prognostic indicators for pulmonary metastasis (hazard ratio=1.07, P=0.048, hazard ratio=6.20, P=0.007). In subgroup analysis, pTstage was the only independent prognostic indicator for pulmonary metastasis in these patients (hazard ratio=4.74, P=0.039).

Conclusions: In renal cell carcinoma patients, the presence of pulmonary nodules is closely related to pulmonary metastasis. Furthermore, pTstage should be considered a negative prognostic indicator in patient with pulmonary nodules. Therefore, a chest radiologic short-term follow-up is needed for these patients.

Keywords: Multiple pulmonary nodules, Renal cell carcinoma, Nephrectomy
Introduction: We investigated the predictors of renal function decline after radical nephroureterectomy (RNU) for upper tract urothelial carcinoma (UTUC) and the correlation between preoperative 99mTc-diethylenetriamine pentaacetic acid (DTPA) renal scan and postoperative renal function.

Materials and Methods: Among 381 patients who underwent RNU for UTUC in our institution between 2005 and 2012, 203 patients underwent DTPA renal scan before surgery. Estimated glomerular filtration rate (eGFR) was calculated using the Modification of Diet in Renal Disease (MDRD) Study equation before and 3 months after RNU. We analyzed preoperative and postoperative eGFRs based on the preoperative DTPA renal scan and identified the predictors of eGFR decline after RNU using multivariable analysis.

Results: Median age was 64 years. Hydronephrosis in computed tomography was found in 145 (71.4%) of patients. Median tumor size was 3 cm and tumor was located in renal pelvis (45.3%), ureter (40.9%), or both (13.8%). The median eGFR declined by 22.7% 3 months after RNU. In preoperative DTPA renal scan, median GFR of the operated and remained kidney was 26.2 and 40.0 ml/min, respectively. The GFR of the resected kidney in DTPA renal scan was significantly correlated with eGFR decline after RNU (R²=0.334, p < 0.001). On multivariable analysis except the factor of preoperative DTPA results, absence of hydronephrosis and smaller tumor size were significant predictors of more decline of eGFR after RNU, while on multivariable analysis including DTPA results, the GFR of the resected kidney in DTPA renal scan was only significant predicting factor of more decrease of eGFR. The equation of renal function 3 months after RNU was estimated as follows: Decreased eGFR ratio=0.712 * (GFR of resected kidney on preoperative DTPA renal scan) - 6.209.

Conclusions: The GFR of the operated kidney in DTPA renal scan was a significant predicting factor of eGFR decline and we established predictive equation of renal function based on the results of DTPA renal scan.

Keywords: Transitional cell carcinoma, Glomerular filtration rate, 99mTc-diethylenetriamine pentaacetic acid
The impacts of squamous variant on oncological outcome in bladder cancer patients after radical cystectomy

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Introduction: The squamous variant in bladder cancer has varied in the clinical reports as a prognostic factor for bladder cancer patients. We evaluated the oncological outcome of squamous variant in bladder cancer patients who underwent radical cystectomy.

Material and Methods: We identified 393 bladder cancer patients who had radical cystectomy at Asan Medical Center from January 2007 to August 2014. Patients were divided into 3 groups according to histologic types: pure urothelial cell carcinoma, squamous variant, and other variants). The impacts of oncological outcome depending on the existence of variant component were assessed using the univariate and multivariate analysis. Mean follow-up duration was 75 months.

Results: Among 393 patients, 103 patients had bladder cancer with the variant histologic component (28.2%), 38 of which had bladder cancer patients with squamous variant and 65 of which (16.5%) were other variants. Squamous and other variants showed a relatively higher cystectomy T stage and nodal stage (≥T2 : pure urothelial cell carcinoma : squamous variant : other variant : 43.8% : 73.7% : 67.7%, node positivity: 22.1%, 36.8%, 46.2%). Lympho vascular invasion was also relatively high in variant groups (pure urothelial cell carcinoma : squamous variant : other variants : 40.7% : 57.9% : 70.8%). On Kaplan-Meir analysis, 5-year overall survival in patients with squamous variant was worse than pure urothelial cell carcinoma (39.6 vs. 71.5%, p=0.004) although it was equivalent with other variants (39.6 vs. 50.3%, p=0.412). On the multivariate analysis, squamous variant (pure urothelial cell carcinoma: reference, squamous variant: HR: 2.16, p=0.012, other variants: HR: 1.36 p=0.252) was significantly associated with overall survival, in addition to body mass index (HR: 0.93, p<0.001), lymph node invasion (HR: 2.16, p<0.001), pathologic T stage (T2 or less: reference, T3: HR: 1.98 p=0.007, T4: HR 3.07, p<0.001).

Conclusion: Patients with squamous variant showed worse oncological outcome compared to pure urothelial cell carcinoma. If squamous variant component is reported on radical cystectomy specimen, adjuvant treatment for the patient after surgery is recommended.

Keywords: Bladder cancer, Squamous variant, Radical cystectomy
Objectives: Chemotherapy with partial cystectomy has been considered a reasonable treatment option in well-selected patients instead of radical cystectomy for muscle-invasive patients. The proportion of bladder sparing management for invasive urothelial carcinoma has been increasing. We investigated the histologic differences and the effect of chemotherapy in patients who underwent partial cystectomy after chemotherapy for invasive urothelial cell carcinoma.

Materials and Methods: We retrospectively reviewed highly selected 24 patients with invasive urothelial cell carcinoma who underwent partial cystectomy from 2011 to 2017. Follow up duration was 18.8±14.0 (months, mean±SD). Bladder preservation protocol in this series mostly consisted of maximal transurethral resection of tumor (TURBT) followed by systemic cisplatin-based chemotherapy, and then open partial cystectomy. Primary endpoint were pathologic T stage in groups between with or without chemotherapy.

Results: 178 patients who underwent radical cystectomy and 24 patients who underwent partial cystectomy due to urothelial carcinoma were accounted. 18 patients performed partial cystectomy after chemotherapy and 6 patients only performed partial cystectomy. Muscle invasion was observed in 15 patients (88.2%) in the chemotherapy group and 4 patients (66.7%) in the non-chemotherapy group. Tumor was located at the dome, anterior, and lateral wall of bladder of 20 patients (83.3%). After chemotherapy, TURBT was performed in 13 patients (72.2%) who were confirmed as post-chemotherapy R0 in 2 patients (11.1%). In the final pathology, 12 patients (66.7%) in the chemotherapy group were pT0. In contrast, pT2 was found in 4 patients (67%) in the non-chemotherapy group. In the chemotherapy group, bladder local recurrence was observed in 2 (11.1%) and pelvic lymph node metastasis was confirmed in 1 patients (5.6%). In the non-chemotherapy group, 2 patients had recurrence after the surgery (bladder local recurrence and retroperitoneal metastasis).

Conclusion: Chemotherapy followed by partial cystectomy is a reasonable treatment option when tumor locates on lateral, anterior, and dome of bladder in highly selected, motivated patients with invasive urothelial carcinoma. Furthermore, findings on post-chemotherapy TURBT can give useful information to predict final pathologic outcomes.

Keywords: Partial cystectomy, Muscle invasive bladder cancer, Bladder preservation
Does the presence of second primary cancer influence the survival outcomes in metastatic renal cell carcinoma patients receiving the first-line targeted therapy?

장춘태, 김대진, 강민용, 전황균, 정병창, 전성수, 이현무, 서성일
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Purpose: The risk of occurring second primary cancer (SPC) in patients with renal cell carcinoma (RCC) is higher than the risk of primary cancer development in normal individuals. Although SPC can influence the prognosis of RCC patients, particularly more advanced disease such as metastatic RCC (mRCC), there are no reports on this topic. Here, we aimed to investigate the prognostic value of the presence of SPC in mRCC patients by using a propensity score-matched analysis.

Materials and Methods: We retrospectively collected the data of 1,659 patients with mRCC treated with first-line systemic tyrosine kinase inhibitor (TKI) from a multicenter database of mRCC in Korea between 2006 and 2016. Propensity scores of various clinical parameters were calculated and a total of 252 patients were matched according to the presence of SPC in 1:5 ratio. Kaplan-Meier method and Cox regression analysis were used to estimate overall survival (OS) and cancer-specific survival (CSS).

Results: Overall, 70 patients with mRCC (4.7%) were diagnosed with SPC. After adjusting key clinicopathological variables with a propensity score-matched analysis, no parameters were different between two groups with SPC (n=46) and without SPCs (n=206). Notably, we found that there were no significant differences of OS according to the presence of SPC, particularly in pre- and post-propensity scores matching, respectively (Fig. 1A). Similarly, no differences were found in CSS according to the presence of SPC in pre- and post-matching (Fig. 1B). Additionally, Cox-regression analysis showed that the hazard ratio (HR) of presence of SPC was 1.16 (95% confidence interval [CI]=0.75-1.80) for OS and 0.97 (95%CI=0.59-1.60) for CSS, respectively.

Conclusions: In summary, our study first highlighted the prognostic role of SPC diagnosis in mRCC patients treated by 1st line TKI, and finally revealed that survival outcomes were not influenced by the presence of SPC in these patients.

Keywords: 신장암, 이차암, 티로신 인산화 억제제
진단 당시에 전이가 있었던 요로상피암 환자에서 원발암에 대한 국소 치료의 역할

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목적: 본 연구에서는 진단 당시에 원격 전이가 있었던 요로상피암 환자에서 원발암에 대한 국소 치료의 역할을 평가하고자 한다.

대상 및 방법: 2005년 11월부터 2016년 11월까지 본원에서 진단 당시에 원격 전이가 있던 방광암, 요관암 및 신우암 환자 147명의 의무기록을 확인하였다. 원발암에 대한 국소치료를 받았거나, 방사선 치료를 받은 환자는 58명이었고, 주치의 판단에 따라 국소 치료를 받지 않은 환자는 74명이었다. 두 군 사이의 추적관찰기간 동안의 생존율은 로그 랭크 테스트를 이용한 Kaplan-Meier 분석법으로 비교하였으며, Cox regression model을 이용하여 CSS와 연관이 있는 인자들을 확인하였다.

결과: 132명의 환자들 중에서 상부 요로상피암 환자에서 국소 치료를 받는 비율이 더 높았다(58.1% vs 37.5%, p=0.039). 추적 기간의 중앙값은 13개월이었으며, 116명이 사망하여 그 중 108명이 요로상피암으로 사망하였다. 2년 OS (30.4% vs 21.4%, p=0.039) 및 CSS (32.0% vs 22.2%, p=0.039) 모두 LT군에서 더 높았다. 다변량 분석에서는 ECOG (HR=1.656, p=0.022)와 간 전이가 CSS와 연관이 있는 것으로 나타났다. 다변량 분석에서는 ECOG (HR=1.656, p=0.022)와 간 전이가 CSS와 연관이 있는 것으로 나타났다. 또한 국소 치료는 요로 합병증이 생긴 비율을 NLT군에서 유의하게 높은 것으로 관찰되었다(27.4% vs 17.0%, p < 0.001).

결론: 진단 당시에 전이가 있었던 요로상피암 환자에서 원발암에 대한 국소 치료는 CSS를 향상시키는 것으로 보인다. 또한 국소 치료는 요로 합병증으로 인한 수술적 치료의 가능성을 낮추는 데에도 도움이 되는 것으로 판단된다.

Keywords: 요로상피암, 전이, 국소 치료
Clinical, prognostic, and therapeutic significance of heat shock protein 27 in bladder cancer

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Purpose: Heat shock protein 27 (HSP27) is highly expressed in many cancers, and its prognostic and predictive value of HSP27 knockdown using siRNA or OGX-427 have been reported. However, clinical and functional role of HSP27 expression in bladder cancer (BC) has not been investigated extensively. Meanwhile, HSP27 expression was found to be significantly higher in muscle-invasive BC (MIBC) than non-muscle invasive BC (NMIBC) tissues in our prior study (Oncotarget 2015, 24:6:40370–84). We aimed to investigate clinicopathological, prognostic, and therapeutic significance of HSP27 in BC.

Materials & Methods: HSP expression was analyzed by antibody microarray including 11 BC (5 NMIBC, 6 MIBC) tissue samples, and was examined in 6 BC cell lines by western blotting, and 132 NMIBC patient cohort by immunohistochemistry. The association between HSP27 and tumor characteristics and prognostic value was analyzed. To validate therapeutic potential of HSP27 knockdown, proliferation, apoptosis and chemosensitivity was examined in 3 MIBC cell lines (J82, 253J, and TCCSUP) after long-term suppression of HSP27 using 5 different shRNAs inoculated into lentivirus-mediated infection system.

Results: In antibody microarray profiling, HSP27 expression in muscle-invasive BC tissues was significantly higher than that in NMIBC tissues. On western blotting, BC cells with higher invasive potential showed higher expression of HSP27, and significant associations were found between HSP27 expression and adverse pathological characteristics such as high-stage and -grade BC. However, HSP27 expression was not associated with clinical outcomes such as tumor recurrence and progression. Although our shRNAs had obvious knockdown effects on HSP27 in BC cells, we found no significant and consistent effects on apoptosis of BC cells or chemotherapeutic sensitivity of BC cells to cisplatin.

Conclusion: Although HSP27 may be a predictor of adverse pathological characteristics in BC, its role as a prognostic biomarker and therapeutic target seems to be limited in BC and would require further study to suggest its value in these roles.

Keywords: 방광암, 종양표지자, HSP27
Inactivation of NBR1 improves sensitivity to rapamycin on bladder cancer cells through AMPK/ULK1-mediated autophagy

지병훈, 문영태, 김경도, 명순철, 김태형, 장인호, 김진욱
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Rapamycin has been highly evaluated in clinical therapeutic intervention for cancer patients as a specific inhibitor of the mammalian target of rapamycin (mTOR) kinase. Rapamycin also stimulates autophagy and mitophagy to remove damaged cells as a regulator of general autophagy. We investigated whether loss of the neighbor of BRCA1 gene (NBR1) sensitizes bladder cancer cells to autophagic stimulation and stress-induced mitochondrial insults by rapamycin treatment.

Using short-hairpin RNA (shRNA) knockdown of NBR1, cells were analyzed by MTT for cellular growth inhibitory effect and were subjected to Western blot for autophagy-related proteins. Apoptosis was detected with Annexin V using flow cytometry. As mitochondrial biogenesis markers, JC-1 fluorescence, MitoSOX Red fluorescence, ROS levels, and ADP/ATP ratio were measured by flow cytometry or microplate reader.

NBR1-deficient bladder cancer cells exhibited enhanced sensitivity to rapamycin that was associated with increased autophagy and mitochondrial defects. Loss of NBR1 expression altered the cellular response to rapamycin treatment, resulting in impaired ATP homeostasis and an increase in reactive oxygen species. Moreover, rapamycin treatment also induced autophagy activity through AMPK activation in NBR1-deficient bladder cancer cells, which was involved in blocked mTOR signaling and activated unc-51 like autophagy activating kinase 1 (ULK1). In the microarray analysis, NBR1 gene was up regulated by rapamycin treatment. In the tissue microarray, NBR1 was more expressed in more aggressive UC of the bladder. In a multivariate Cox regression model, NBR1 was significant predictor of recurrence in UC of the bladder.

Our findings provide a rationale for rapamycin treatment of NBR1-deficient bladder cancer through induction of autophagy activity by regulating the AMPK/mTOR signaling pathway, which contributed to the apoptosis induction by mitochondrial defects, indicating that NBR1 can be a potential target.

Keywords: 방광암, 라파마이신, NBR1
Individualized add-on treatment based on the difference of receptor of alpha blocker in animal models of overactive bladder and benign prostate hyperplasia

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Introduction: α1-antagonists are widely used for the treatment of lower urinary tract symptoms. However, add-on therapy using different α1-antagonist has not yet been determined. The aim of this study was to investigate the efficacy and safety of add-on therapy using various α1-antagonists in animal models of overactive bladder (OAB) and benign prostatic hyperplasia (BPH) through urodynamic evaluation and measurements of angiogenesis related factors.

Methods: Female SD rats were used in OAB study, while male SD rats were used in BPH study. OAB was induced by i.p. injection of cyclophosphamide (75 mg/kg) every third day for 10 days. The female rats were divided into six groups (n=10 in each group): control group, OAB group, alfuzosin-treated OAB group, naftopidil-treated OAB group, tamsulosin-treated OAB group and naftopidil with tamsulosin-treated OAB group. BPH was induced by bilateral orchiectomy and injection of testosterone (20 mg/kg) 0.5 ml s.c. The male rats were also divided into six groups (n=10 in each group): control group, BPH group, alfuzosin-treated BPH group, naftopidil-treated BPH group, tamsulosin-treated BPH group and naftopidil with tamsulosin-treated BPH group. The rats in the treated groups orally received drugs once a day for 14 (OAB) and 30 (BPH) consecutive days. Cystometry was performed in 14 (OAB) and 30 (BPH) days. After the cystometry the expression levels of VEGF, IGF-1 and TGF-β of the bladder and prostate were quantified by Western blotting.

Results: On cystometry, the single α1-antagonist therapy showed more improved voiding function in OAB and BPH models than combined therapy in terms of contraction pressure and time. In addition, α1-antagonists facilitated the recovery of tissues from injury caused in animals with OAB and BPH. Rats with OAB and BPH showed increased expressions in angiogenesis related factors including VEGF, IGF-1, and TGF-β. On the other hand, both single and combined α1-antagonist therapies suppressed increases of angiogenetic factors in the bladder and prostate.

Conclusions: In the present study, single therapy using tamsulosin showed the best effect in urodynamics and measurement of factors using western blot. We expected that combined therapy would be better than single therapy due to various pharmacological properties. However, there was no superiority of combined therapy for treatment of OAB and BPH.

Keywords: Prostatic hyperplasia, Overactive bladder, Adrenergic alpha-1 receptor antagonists
2, 3차 병원을 내원한 전립선비대증 환자의 배뇨증상 및 저장증상 분포와 이에 따른 삶의 질 분석: 다기관, 관찰적, 단면적 역학연
조희주1, 문경태1, 조정만1, 강정윤1, 유탁근1, 이승욱2
1울지의대 비뇨의학과, 2한양의대 비뇨의학과
목적: 전립선 비대증으로 인한 중등도 이상의 하부요로증상을 주소로 2, 3차 병원을 내원한 환자의 저장, 배뇨증상의 분포와 삶의 질과의 연관성을 분석한다.
대상 및 방법: 총 16개의 2, 3차 병원을 하부요로증상을 주소로 내원한 만 40세이상의 남성 중 IPSS가 8점이상인 환자를 대상으로 하였다. 환자의 BMI, 유병기간, 동반질환, 알파차단제 및 항콜린제 복용력을 조사하였다. 국제전립선증상점수표(IPSS), 과민성방광증상점수표(OABSS), BPH QOL-K1 설문지를 시행하고 이의 분포와 삶의 질과의 연관성을 분석하였다. BPH QOL K1의 첫 4 문항은 각각 비뇨, 야간뇨, 지연뇨, 세뇨의 불편함 정도를 측정하고 이는 5문항은 삶의 불편함, 질병에 대한 걱정, 삶과 성생활에 대한 흥미를 평가한다.
결과: 총 2501명의 환자의 평균나이는 65.6±9.2세, 유병기간은 48.9±41.4개월, BMI 24.2±3.8였다. 당뇨 혹은 고혈압이 있는 환자는 각각 20.5%, 28.6%였다. 알파차단제 복용률을 가진 환자는 50.0%, 항콜린제 복용률을 가진 환자는 10.2%였다. IPSS 8-19점인 환자는 67.2%, 20점 이상인 환자는 32.8%였다. 나이가 증가함에 따라 IPSS의총점과 storage subscale, OABSS총점이 유의하게 증가하였으며 BPH QOL K1의 모든 문항의 점수가 유의하게 증가하였다. 나이에 따른 voiding subscale은 유의한 차이가 없었다(Table 1). 알파차단제 복용력에 따른 하부요로증상의 차이는 없었으며 항콜린제를 투여한 환자들은 저장증상이 유의하게 높았다. IPSS 20점 이상인 환자는 BPH QOL K1의 생활의 불편함, 질병에 대한 걱정, 삶과 성생활에 대한 흥미 문항이 유의하게 더욱 악화되었다.
결론: 나이가 들수록 하부요로 증상, 특히 저장증상이 유의하게 더욱 악화되었으며 이로 인한 일상생활의 불편함, 걱정, 삶과 성생활에 대한 흥미의 정도가 유의하게 감소하였다.
Keywords: 배뇨증상, 저장증상, 삶의 질
**Anterior depth of prostate: morphological factor associated with de novo urinary incontinence following holmium laser enucleation of the prostate**

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**Objective:** Transient urinary incontinence may occur in up to 44% of patients after holmium laser enucleation of the prostate (HoLEP). However, there are few published data concerning the factors associated with de novo urinary incontinence (UI). The aim of this study was to investigate whether morphological characteristics of prostate are associated with de novo UI after HoLEP.

**Materials and Methods:** Our study included 223 patients who underwent HoLEP. Morphological characteristics of prostate was estimated by trans-rectal ultrasonography (TRUS) such as size, width, depth, longitudinal diameter, presence of intravesical prostatic protrusion, posterior depth, and anterior depth. Anterior depth of prostate was defined as a diameter from prostate urethra to anterior prostate capsule on a sagittal plane of TRUS. Enrolled patients were divided into two groups according to the presence of UI. Independent t test was used to compare between two groups. Logistic regression analysis was performed to investigate a correlation with de novo UI.

**Results:** After HoLEP, 68 patients (30.4%) had de novo UI, most of them resolved within 1-6 months. Age and anterior depth of prostate were significantly higher in UI group than non-UI group (76.07±5.82 vs 72.01±8.04 years; P=0.007, 18.61±3.89 vs 11.84±3.70 mm, P<0.001). There were no significant differences in the other morphological characteristics, prostate volume, retrieved tissue weight, and operative time between two groups. In a logistic linear regression analysis, only anterior depth of prostate was an independent predictor of de novo UI after HoLEP.

**Conclusion:** About one-third of patients might undergo de novo UI following HoLEP, and most of them might have been resolved within 1-6 months. Thick anterior depth of prostate is associated with de novo UI after HoLEP, and could be used as a practical tool to predict postoperative de novo UI.

**Keywords:** Prostatic hyperplasia, Laser therapy, Urinary incontinence
The pitfalls of transrectal ultrasonography in the evaluation of prostatic urethral angle

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Purpose: During transrectal ultrasonography (TRUS), compression of the rectal wall by the probe can result in bent distortion of the image of the prostate. Recently, a new hypothesis on prostatic urethral angle (PUA) suggested that by applying the hypothesis on fluid dynamics to the process of urination in the prostatic urethra, the energy loss in the prostatic urethra could occur during micturition which increased proportionally to PUA and energy loss resulted in a decrease of the urine velocity. Thus, we conducted to evaluate the impact of bent distortion on the accuracy of PUA measurements obtained by TRUS.

Materials & Methods: Between Apr 2011 and Feb 2012, patients with prostate cancer who were scheduled to undergo radical prostatectomy were included prospectively. TRUS images were obtained prospectively from 65 patients with prostate cancer. The degree of rectal compression on the probe was varied in each case to obtain a typical bent distortion image (BDI) and minimally bent images (MBI). Magnetic resonance imaging (MRI) served as the reference. The PUA was measured from the midsagittal image taken when the posterior wall of the prostate using sagittal images of T2–weighted MRI, bent distortion images and MBIs.

Results: The mean PUA from MRI, DBI and MBIs were 40.06±11.41 degree, 25.11±12.72 degree and 34.86±8.42 degree, respectively. With regard to the BDI measurements, the intraclass correlation coefficients (ICCs) for PUA were 0.814 (0.470 (95% CI 0.131–0.677)), but MBI measurements, ICCs were higher than bent distortion images (0.814 (95% CI 0.695–0.887)). In Passing and Bablock regression models, comparison between MBIs and bent distortion images showed significant deviation from linearity (P<0.01), but not significant deviation in MRI and MBIs (P>0.10).

Conclusion: Bent distortion during TRUS imaging of the prostate affects the accuracy of PUA measurements. To minimize prostatic image distortion, the rectal probe should be placed so that the posterior wall of the prostate is as flat as possible.

Keywords: 전립선, 초음파, MRI
The effect of surgery for benign prostatic hyperplasia with prostatic calcification

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Purpose: Prostatic calcifications are not rarely observed in the patients with benign prostatic hyperplasia (BPH), and negative effect on lower urinary tract symptoms (LUTS) has been reported in recent studies. However, the effect of surgery for enlarged prostate with prostatic calcifications is not still well-investigated. In this study, we compared the surgical outcomes of BPH between the patients with or without prostatic calcifications.

Materials and Methods: From June 2012 to December 2016, 121 patients with prostate size between 30cc and 80cc, who underwent transurethral resection of prostate (TURP) or holmium laser enucleation of prostate (HoLEP) and prostatic calcifications were completely removed, were enrolled into our study. We divided these patients into 2 groups according to the presence of prostatic calcifications (calcification group, n=56; non-calcification group, n=65). We retrospectively compared the patients’ medical characteristics, peri-operative surgical outcomes, uro-flowmetry, and International Prostate Symptom Score (IPSS) between the 2 groups.

Results: In the Student’s t-test, pre-operative IPSS voiding-subscore (12.78 vs. 10.68, p=0.028) and quality of life (QoL) score (4.32 vs. 3.86, p=0.021) was significantly different between the calcification and non-calcification groups. The other pre-operative patients’ characteristics and operation time were not statistically different. The calcification group showed better post-operative IPSS voiding-subscore (4.48 vs. 5.97, p=0.047), improvement of total IPSS (11.84 vs. 6.6, p=0.006) and improvement of QoL score (2.21 vs. 1.38, p=0.001). The post-operative uro-flowmetry was not significantly different between 2 groups (Qmax: 16.61 m/s vs. 18.2 m/s, residual urine: 36.46 cc vs. 42.72 cc).

Conclusion: In this study, the patients with prostatic calcifications showed better surgical outcomes in terms of voiding symptom improvement. From the results of this study, we can assume that complete removal of prostatic calcifications combined with surgical resection of prostatic adenoma may be more helpful to improve LUTS in the patients with BPH and prostatic calcifications.

Keywords: 전립선 석회화, 경도적 전립선 경제증
전립선비대증환자에 대한 치료로서 제1세대인 80W와 제3세대인 180W XPS GreenLight 레이저를 이용한 광선택적전립선기화술 두 수술간의 효용성 및 안전성 비교

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목적: 전립선비대증환자에서 GreenLight레이저를 이용한 광선택적전립선기화술(PVP)은 전통적 치료방법인 경요도적전립선절제술(TUR-P)에 비해 안전성 및 효과는 거의 대등한 것으로 보고되고 있으나, 초기모델인 1세대인 80W나 2세대인 120W는 수술시간이 오래 걸리고 전립선용적 감소가 덜하다는 보고도 있다. 이에 국내에서 처음으로 3세대인 최대 180W 고출력의 XPS (Xcelated Performance System) 레이저를 이용한 PVP 수술을 시행하고 이를 이전에 시행하였던 제1세대 80W 수술과 효용성 및 안전성을 비교하고자 하였다.

대상 및 방법: 저자들이 속한 단일병원에서 전립선비대증으로 진단후 2013년 1월부터 2014년 6월까지 시행된 제1세대 80W환자군(제1군, n=44)과 2014년 7월부터 2016년 12월까지 시행된 제3세대 180W환자군(제2군, n=41)으로 구분하여 전립선암이 의심되지 않으며, 도뇨관을 유지한 환자를 제외하고, 6개월이상 추적관찰이 이루어진 환자를 대상으로 수술시간, 레이저조사시간, 사용레이저용량, 도뇨관 유지기간, 입원기간, 수술전 및 1, 3, 6개월후 IPSS 및 최대요속, 잔뇨량, 전립선용적 등을 측정하고 분석하였다.

결과: 수술의 효용성을 확인해보자면, 제1군은 수술시간은 89.6±12.5분에 비하여 제2군은 70.8±10.5분으로 측정되어 각 군간에 통계적으로 유의한 차이를 보였다(<0.001). 또한, 레이저 조사시간도 각각 78.9±33.1분, 50.5±19.4분으로 제2군에서 시간이 더 짧게 나타났으며, 이에 반해 입원시간과 도뇨관 유지시간은 두 군간 비슷한 기간으로 나와 통계적 유의성이 없었다. 수술전후 전립선용적의 차이를 계산한 절제 전립선용적은 각각 19.9±5.9 ml, 30.1±8.7 ml로 나타났으며 이는 제2군에서 통계적으로 유의하게 높아 전립선을 중량히 더 많이 제거하였음을 알 수 있었다(p=0.01). 또한 배뇨증상의 주관적 증상점수인 수술전후 IPSS와 QoL을 비교해 보면, 두 군 모두 수술후 1개월이 지난 시점부터 점수가 유의하게 낮아졌으며, 특히 두 군을 비교할 때, 제2군이 제1군보다 통계적으로 유의하게 낮아 배뇨증상 호전이 더 높았음을 알 수 있었다. 또한 객관적 배뇨기능의 지표인 수술전후 최대요속(Cmax)과 배뇨후 잔뇨량(PVR)의 차이도 두 군 중에서 제2군이 상당히 우수한 점수를 보였다. 또한, 제1군은 수술중 심한 출혈이나 수술방법 변형 등 수술합병증이 각각 5 (11.4%), 4 (9.1%)인데 비해, 제2군은 각각 1명(2.4%)에 불과하여 숨증 및 수술후 합병증이 매우 낮음을 보여주고 있었다.

결론: 제3세대 180W레이저가 제1세대인 80W에 비해 수술후 도뇨관 유지기간, 수술시간에서 통계적으로 유의하게 우수하였으며, 배뇨증상의 호전도 탁월한 효과를 보였다. 또한, 합병증 측면에서도 발생빈도가 훨씬 낮아 제1세대 80W보다 우수한 수술적 치료법이 될 수 있으며, 환자의 실의 질이 향상될 것으로 생각한다.

Keywords: 전립선비대증, 레이저, 광선택적기화술
Open and robotic simple prostatectomy for huge BPH: comparison of safety and efficacy

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목적: 개복 전립선 단순 절제술(OSP)과 로봇 전립선 단순 절제술(RSP)의 안전성 및 효용성에 대해 비교 분석하고자 한다.

대상 및 방법: 2005년 1월부터 2017년 7월까지 OSP 및 RSP를 시행한 환자들 중 6개월 이상 추적 관찰 하였던 환자 44명을 대상으로 후향적 분석을 시행하였다. 수술 전 환자 상태 및 수술과 관련된 합병증 여부, 수술 전 및 수술 후 3개월째 IPSS와 요속 검사를 결과를 분석하였다.

결과: OSP는 23례에서 시행하였으며 RSP는 21례에서 시행하였다. 두 군의 수술 시 나이, PSA 수치, TPV 및 TZV은 차이가 없었다(Table 1), 두 군 모두 수술 후 3개월에 시행한 요속 검사 및 IPSS의 의미 있는 개선이 관찰되었다(Table 2). 수술 시간은 OSP는 159.6±29.5분, RSP는 162.5±36.1분으로 차이가 없었으며 결제된 전립선 용적 또한 OSP는 72.5±19.1g, RSP는 69.8±16.7g으로 차이가 관찰되지 않았다. 모든 환자에서 특별한 합병증 없이 7~10일에 요도 카테터가 제거되었으나 OSP를 시행한 환자 7례(30.4%) 및 RSP를 시행한 환자 2례(9.5%)에서 수술 중 발생한 출혈로 인한 수혈을 시행하였다. RSP에서 수혈을 시행한 환자들은 초기 2례 이었으며 이 후에는 수혈을 시행한 환자는 없었다. 양 군의 모든 환자에서 추적 관찰 기간 동안 특별한 합병증은 발생되지 않았으나 OSP 1례 및 RSP 1례에서 추적관찰 기간 중에 방광 경부 협착이 발견되어 내시경 하 방광 경부 절개술을 시행하였다.

결론: 전립선 비대증에서 침습적인 전립선 절제술의 필요성은 많이 감소하였으나 거대 전립선 비대증, 거대 방광 결석의 동반, 기존의 요도 손상 및 요도 협착이 있는 환자의 경우에는 침습적인 전립선 절제술이 여전히 필요하며 OSP 및 RSP 모두 술 후 우수한 결과를 가져올 수 있다. 그러나 출혈로 인한 합병증은 RSP가 현저히 적으며 이에 RSP는 기존의 OSP를 대체할 수 있는 것으로 보여진다.

Keywords: 거대 전립선 비대증, 개복 전립선 단순 절제술, 로봇 전립선 단순 절제술
Urolift as a minimal invasive intra-prostastic implant for BPH treatment: a pilot study performed in Korea

양종렬, 성재우, 조신제, 문형우, 이규원, 배용진, 김수진, 조혁진, 하유신, 이지열, 김세웅
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**Purposes:** As a minimal invasive device for benign prostatic hyperplasia (BPH) treatment, Urolift is widely accepted in the worldwide but it is not widely used in Korea. We investigated the short-term efficacy of urolift for patients with BPH.

**Materials and Methods:** Seven patients with BPH who were taking a blockers were treated with urolift under local anesthesia with sedation. Foley urethral catheter was placed post operation and removed on the same day. Whenever possible, patients were scheduled to be discharged on the day, but someone was admitted to the hospital due to the personal reason. IPSS, maximum urinary flow rate and post voiding residual urine were evaluated preoperatively and 1 month later.

**Results:** Mean age was 68.71±7.27 years old and mean prostatic volume was 36.27±6.62 g. No severe adverse event was observed postoperatively. Preoperative total IPSS and QOL were 22.2±12.93 and 3.8±1.09. Total IPSS was significantly improved to 18.72±7.2 (p=0.043) after treatment, but QOL was 3.57±1.51 and it was statistically not different. Voiding subscore of IPSS was significantly improved (p=0.041) but storage subscore was not improved significantly. And post voiding residual urine were improved after treatment significantly 62.66±83.91 to 7.66±3.21 (p=0.03) however no significant improvement in Qmax that was 10.81±3.44 and 9.93±8.5 respectively. Mean hospital day was 1.71±0.48. No patient reported retrograde ejaculation.

**Conclusions:** We evaluated short-term efficacy of Urolift, a new minimally invasive device for BPH treatment in Korea, and showed improvement of IPSS, especially voiding symptoms. Long term follow-up is needed, but it is expected that not only the improvement of voiding symptom but also the preservation of sexual function is possible.

**Keywords:** 전립선비대증, 유로리프트, 하부요로증상
의학적인 연구, 조희주, 조정만, 유탁근, 강정율
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목적: 환자의 통증 평가에 흔히 사용하는 visual analogue scale (VAS)의 평가방법을 변형하여 전립선 비대증 환자들의 치료 만족도를 평가하고자, 기존에 사용되어 왔던 국제전립선증상점수(IPSS)와 과민성방광증상점수(OABSS)의 개선 정도와 visual analogue scale 만족도 점수간에 상관관계가 있는지 알아보았다.
대상 및 방법: 2016년 2월부터 본원 비뇨기과에 내원한 신환 중 하부요로증상 및 전립선 비대증으로 진단받고 약물치료를 시작한 59명을 대상으로 전향적 연구를 시행하였다. 환자들은 치료 전과 치료 시작 후 3개월에 국제전립선증상점수 및 과민성방광증상점수를 평가하였고, 치료 3개월째에 visual analogue scale을 통해 치료만족도를 평가하였다. Visual analogue scale은 1-10점으로, 0점은 ‘전혀 만족하지 않는다’ 5점은 ‘그럭저럭 만족한다’ 10점은 ‘매우 만족한다’로 구성하였다.
결과: 치료 전 후 국제전립선증상점수의 총 점수의 개선 정도와 visual analogue scale 만족도 점수와 상관성을 보였다 (Pearson correlation coefficient r=0.401, p<0.01). 또한 국제전립선증상점수의 삶의 질 개선 정도와 visual analogue scale 만족도 점수도 상관성을 보였다(Pearson correlation coefficient r=0.493, p<0.01). 국제전립선증상점수에서 배뇨 증상 점수의 개선 정도는 visual analogue scale 만족도 점수와 상관관계(Pearson correlation coefficient r=0.399, p<0.01)을 보였으나 저장 증상 점수의 개선 정도는 visual analogue scale 만족도 점수간에는 상관성을 보이지 않았다. Visual analogue scale 점수에 따라 0-5점인 환자 25명, 6-10점인 환자34명으로 나누어 두 군의 국제전립선증상점수 및 과민성방광증상점수를 비교하였다. 국제전립선증상점수 총 점수의 개선 정도는 각각 2.64±8.72, 8.79±5.94로 분석되었으며 삶의 질 점수의 개선 정도는 각각 0.44±1.12, 1.59±1.61로 분석되어 두 군간의 유의한 차이를 보였다(p<0.01). 국제전립선증상점수의 배뇨 증상 점수의 개선 정도는 0.92±7.55, 6.17±5.29로 유의한 차이를 보였으나 저장 증상 점수의 개선 정도는 두 군간의 유의한 차이를 보이지 않았다.
결론: Visual analogue scale을 통한 치료 만족도 점수는 전립선 비대증 환자의 배뇨 증상 개선 정도와 연관성을 보이고 있어, 약물 치료 후 배뇨 증상의 호전여부를 측정하는데 간편하게 이용될 수 있을 것으로 본다. 그러나 본 연구는 예비연구로 앞으로 더 많은 환자를 대상으로 지속적인 연구를 시행할 계획이다.

Keywords: 시각 아날로그 척도, 전립선 비대증, 만족도
Favorable prognostic factors after TURP in patients with benign prostatic hyperplasia: a single surgeon’s experience

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Purpose: To evaluate the favorable prognostic factors after TURP for the treatment of lower urinary tract symptoms related to BPH.

Material & Methods: From March 2003 to December 2016, 301 patients who underwent TURP were analyzed, retrospectively. Baseline characteristics were collected such as Age, prostate specific antigen (PSA), prostate volume (PV), International Prostate Symptom Score (IPSS), and uroflowmetry (UFR) were collected. We divided the patients into two groups according to the factors that affect the outcome. After TURP, we followed up the patients at three months, and we analyzed the treatment outcomes.

Results: Table 1 showed baseline characteristics of patients. Except for IPSS and QoL in the two groups according to the resection rate, there were no significant differences in baseline characteristics, statistically. The preoperative IPSS was 24.40±5.70 and the IPSS was 11.39±7.18 postoperatively in the group with voiding symptom score > 8 (P < 0.01). Preoperative IPSS was 18.00±10.06 and postoperative IPSS was 9.65±7.68 in patient with resection rate > 0.3 (P < 0.01).

Conclusions: We suggest that performing TURP in patients with voiding symptom score > 8 and performing a resection rate of 0.3 or more are favorable prognostic factors for outcomes, carefully.

Keywords: 전립선비대증, 경요도전립선절제술, 배뇨증상

Table 1. Baseline characteristics according to factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Voiding (n=100)</th>
<th>Preop</th>
<th>Postop</th>
<th>Δ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>63.7±7.99</td>
<td>65.0±8.5</td>
<td>71.0±6.6</td>
<td>5.0±0.7</td>
</tr>
<tr>
<td>PSA</td>
<td>6.8±3.2</td>
<td>6.5±3.1</td>
<td>9.3±4.7</td>
<td>2.8±1.6</td>
</tr>
<tr>
<td>PV</td>
<td>42.7±12.9</td>
<td>41.0±13.3</td>
<td>45.0±16.3</td>
<td>3.9±2.0</td>
</tr>
<tr>
<td>IPSS</td>
<td>24.40±5.70</td>
<td>11.39±7.18</td>
<td>15.3±7.9</td>
<td>3.9±2.0</td>
</tr>
<tr>
<td>QoL</td>
<td>24.40±5.70</td>
<td>11.39±7.18</td>
<td>15.3±7.9</td>
<td>3.9±2.0</td>
</tr>
<tr>
<td>Skirt</td>
<td>24.40±5.70</td>
<td>11.39±7.18</td>
<td>15.3±7.9</td>
<td>3.9±2.0</td>
</tr>
<tr>
<td>Resection rate &gt; 0.3</td>
<td>24.40±5.70</td>
<td>11.39±7.18</td>
<td>15.3±7.9</td>
<td>3.9±2.0</td>
</tr>
</tbody>
</table>

Values are presented as mean±standard deviation.

Table 2. Differences between parameters according to factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Voiding (n=100)</th>
<th>Preop</th>
<th>Postop</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voiding symptom score &gt; 8</td>
<td>63.7±7.99</td>
<td>65.0±8.5</td>
<td>71.0±6.6</td>
<td>5.0±0.7</td>
</tr>
<tr>
<td>Preoperative IPSS</td>
<td>24.40±5.70</td>
<td>24.40±5.70</td>
<td>24.40±5.70</td>
<td>24.40±5.70</td>
</tr>
<tr>
<td>Postoperative IPSS</td>
<td>11.39±7.18</td>
<td>11.39±7.18</td>
<td>11.39±7.18</td>
<td>11.39±7.18</td>
</tr>
<tr>
<td>Δ Value</td>
<td>15.3±7.9</td>
<td>15.3±7.9</td>
<td>15.3±7.9</td>
<td>15.3±7.9</td>
</tr>
</tbody>
</table>

Values are presented as mean±standard deviation.

Fig 1. Comparison of clinical parameter according to factors. Group A: Voiding symptom score < 8, Group B: Voiding symptom score > 8, Group C: resection rate < 0.3, Group D: resection rate > 0.3.
**Predictive risk factors of postoperative urethral stricture following holmium laser enucleation of the prostate during the initial learning period**

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대진의료재단 분당제생병원 비뇨의과학

**Purpose:** To report our initial experience and analyze the predictive factors for postoperative urethral stricture following holmium laser enucleation of the prostate (HoLEP) during the initial learning period in patients with benign prostate hyperplasia.

**Materials and Methods:** We evaluated 101 patients with benign prostatic hyperplasia who underwent HoLEP between February 2014 and March 2016. Medical records of 101 patients (mean age of 71.7 years) were retrospectively reviewed. The risk factors for urethral stricture after HoLEP were analyzed using multivariate logistic regression analysis.

**Results:** Of the 101 patients, 19 patients (18.8%) developed urethral stricture after HoLEP. There were no significant difference of baseline characteristics such as age, BMI, history of diabetes mellitus or hypertension, anticoagulant medication, prostate specific antigen, prostate volume, enucleation time and morcellation time between stricture group and non-stricture group. However, high enucleation volume (≥35 g) showed higher stricture rate than low enucleation volume (<35 g). Multivariate logistic regression analysis indicated that high enucleation volume (≥35 g) (OR 8.205, p=0.022) was independent risk factor for developing postoperative urethral stricture after HoLEP.

**Conclusions:** High enucleation volume was independent predictors of postoperative urethral stricture in patients who underwent HoLEP during the initial learning period. Surgeons in training should take care to prevent postoperative stricture especially large prostate.

**Keywords:** 전립선비대증, 홀뮴 레이저 전립선 절제술, 요도 협착

<table>
<thead>
<tr>
<th>Variables</th>
<th>Occurrence of urethral stricturea</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (≤75 years vs. &gt;75 years)</td>
<td>0.755</td>
<td>0.315-1.815</td>
<td>0.601</td>
<td></td>
</tr>
<tr>
<td>BMI (≤25 kg/m² vs. &gt;25 kg/m²)</td>
<td>1.000</td>
<td>0.436-2.267</td>
<td>0.918</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus (No vs. Yes)</td>
<td>1.100</td>
<td>0.591-2.001</td>
<td>0.796</td>
<td></td>
</tr>
<tr>
<td>Prostate specific antigen (&lt;4 ng/ml vs. ≥4 ng/ml)</td>
<td>0.404</td>
<td>0.140-1.221</td>
<td>0.228</td>
<td></td>
</tr>
<tr>
<td>Anticoagulant medication (No vs. Yes)</td>
<td>0.505</td>
<td>0.255-1.000</td>
<td>0.052</td>
<td></td>
</tr>
<tr>
<td>Total prostate volume (&lt;80 mL vs. ≥80 mL)</td>
<td>4.242</td>
<td>2.794-6.417</td>
<td>0.091</td>
<td></td>
</tr>
<tr>
<td>Enucleation time (≥100 min vs. &lt;100 min)</td>
<td>0.632</td>
<td>0.370-1.081</td>
<td>0.099</td>
<td></td>
</tr>
<tr>
<td>Morcellation time (&lt;30 min vs. ≥30 min)</td>
<td>3.337</td>
<td>0.544-1.988</td>
<td>0.586</td>
<td></td>
</tr>
<tr>
<td>Prostate enucleation volume (≥35 g vs. &lt;35 g)</td>
<td>8.205</td>
<td>3.034-24.041</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td>Catheterization period (≤3 days vs. &gt;3 days)</td>
<td>0.785</td>
<td>0.181-0.834</td>
<td>0.864</td>
<td></td>
</tr>
</tbody>
</table>

BMI: Body mass index, a: analyzed by multivariate logistic regression model
Low serum 25-OH vitamin D level plays a role in overactive bladder but not in benign prostatic hyperplasia

유상준, 박주현, 조성용, 손환철, 정 현, 조민철
보라매병원 비뇨의학과

Objectives: To evaluate the impacts of serum vitamin D level on male lower urinary tract symptoms (LUTS).

Materials and Methods: From 2014 to 2017, 434 male patients with LUTS were included. The impacts of vitamin D on LUTS were evaluated using multivariate analysis to adjust for age, body mass index, prostate specific antigen, testosterone, physical activity, and prostate volume. To exclude the effect of seasons, we also analyzed the impacts during each season.

Results: Vitamin D level was lowest in winter. According to the International Prostate Symptom Score (I−PSS) and Overactive Bladder Symptom Score (OABSS), the severity of LUTS peaked in winter. There were no seasonal differences between prostate volume, peak flow rate, and post−void residual urine. For all patients, multivariate analysis showed that lower vitamin D was significantly associated with a higher total OABSS, whereas it was not associated with prostate volume, peak flow rate, post−void residual urine, and total I−PSS. In winter, lower vitamin D was significantly associated with a higher total OABSS based on multivariate analysis, whereas it was not during other seasons. In patients with vitamin D deficiency, the total OABSS significantly decreased after vitamin D replacement. The greatest improvement in total OABSS was associated with lower pre−treatment total OABSS and higher post−treatment vitamin D level.

Conclusions: Vitamin D decrement in men with LUTS may play a role in aggravated overactive bladder (OAB) symptoms, especially in winter. Increasing vitamin D in patients with vitamin D deficiency appears to alleviate OAB symptoms.

Keywords: 전립선 비대증, 과민성방광, 비타민D
Association between female lower urinary tract symptoms and cardiovascular risk scores including framingham risk score and ACC/AHA risk score

이현영1, 문지은2, 양원재1, 두승환1, 김재현1, 이상욱3, 선화연1, 송윤섭1
순천향대학교 1서울병원 비뇨의학과, 2부천병원 임상시험센터 생물통계학과, 3부천병원 비뇨의학과

목적: This study aimed to investigate the association between lower urinary tract symptoms (LUTS) and cardiovascular disease (CVD) risk using International Prostate Symptom Score (IPSS), Overactive Bladder Symptom Score (OABSS), Quality of Life (QoL) questionnerie and CVD risk scores.

대상 및 방법: A total of 1014 healthy females, who participated in a voluntary health check in a health promotion center from November 2013 to October 2015, were reviewed. CVD risk scores were calculated using Framingham risk score and American College of Cardiology (ACC)/American Heart Association (AHA) score. Correlation and Partial correlation analysis was conducted after adjustment of BMI and age.

결과 및 결론: Correlations between total IPSS, IPSS voiding symptom and ACC/AHA score showed positive associations (r=0.121, p-value=0.001, r=0.111, p-value=0.0026, respectively). And for ACC/AHA score, partial correlation after adjustment of BMI and age showed positive correlation between total IPSS, IPSS voiding symptoms, OABSS and ACC/AHA score (r=0.091 p-value=0.014, r=0.081 p-value=0.028, r=0.083 p-value=0.025, respectively).

This study represented a possibility of female lower urinary tract symptoms as a risk factor for future CVD risk. Prospective study or cohort study is needed for further validation.

Keywords: 심혈관계 질환, 하부 요로 증상, 과민성 방광
The outcomes of transobturator tape (TOT) procedure in women with mixed urinary incontinence

Sumin Son, Tae Hee Kim, Seong Jong Eun, Jae Hyeon Kim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsung Park

Purpose: Treatment of mixed urinary incontinence (MUI) is often challenging, as a single modality may be inadequate for alleviating both the urge and stress component. The aims of our study were (1) to investigate subjective and objective outcomes after transobturator tape procedure (TOT) in MUI women.

Materials and Methods: We prospectively analyzed the surgical outcomes from 178 patients with stress urinary incontinence or MUI who underwent TOT. Overall objective cure of incontinence and subjective symptom improvement [Incontinence Quality of Life (I-QoL), Overactive bladder—quality of life symptom score short form (OAB-q SF), AUA symptom score] were compared in women with stress incontinence only (group I), MUI with predominant stress leakage (group II), and MUI with predominant urgency incontinence (group III). All evaluable subjects had a routine office evaluation and subjective assessment for the incontinence and OAB symptoms at preoperatively and 3months postoperatively.

Results: Preoperatively 37% had stress incontinence only, 36% had MUI with predominant stress leakage and 27% MUI with predominant urgency incontinence. Mean patients age was 59±10 years. Overall incontinence cure rate was similar between groups (group I: 98.1%, group II: 96.9%, group III: 95.5%, p=0.02). After incontinence surgery, I-QoL, OAB-q SF and AUA (QoL) symptom score were improved (p=0.015, p=0.032, p=0.021). Among the groups, group I and II showed significantly improvement in the subjective outcomes compared to group III.

Conclusions: MUI women with predominant stress leakage showed a better objective and subjective outcome than those with predominant urge incontinence by TOT procedure. However, TOT procedure is effective in patients with MUI showing predominant urgency incontinence in terms of incontinence cure and improving quality of life.

Keywords: Women, Mixed urinary incontinence (MUI), Transobturator tape procedure (TOT)
The impact of overactive bladder syndrome on psychological stress: differences according to gender and menopausal status

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Objective: The correlation between depression and overactive bladder syndrome (OAB) has been reported on several studies. However, there are few published data concerning the relationship between OAB and psychological stress. The aim of this study was to investigate whether OAB is associated with psychological stress, and determine differences according to gender and menopausal status.

Materials and Methods: The study included 200 patients who were diagnosed with OAB. The severity of OAB symptoms was estimated by OAB symptom scales (OABSS), Perceived stress scale (PSS) and center for epidemiological studies–depression scale (CESD) was used to estimate their psychological stress level and depression. Enrolled patients were divided into several groups according to gender, menopausal status and OABSS. A mild symptom was defined as an OABSS $\leq 5$, a moderate symptom as a $6 \leq$ OABSS $\leq 11$, a severe symptom as an OABSS $\geq 12$. Pearson correlation coefficient was used to investigate a correlation between OAB symptoms severity and stress levels. Chi-square test and independent t test was performed to compare between groups. Patients with neurogenic bladder, urinary tract infection, Parkinson’s disease and psychological disorders were excluded.

Results: There was a significant correlation between the severity of OAB symptoms and psychological stress levels ($r=0.174$, $p=0.014$). In all symptoms groups, the PSS was significantly higher in female than male patients (mild, $14.00 \pm 7.24$ vs. $8.88 \pm 6.75$, $p=0.013$: moderate, $16.48 \pm 6.60$ vs. $10.59 \pm 5.88$, $p<0.001$: severe, $16.79 \pm 5.17$ vs. $13.50 \pm 5.78$, $p=0.035$). In a female group, the PSS was significantly higher in a non-menopause group than a menopause group ($20.07 \pm 5.40$ vs. $14.81 \pm 6.46$, $p=0.008$). The CESD was significantly higher in female patients than male patients in only moderate symptom group ($13.53 \pm 9.65$ vs. $6.18 \pm 5.87$, $p<0.001$).

Conclusion: The symptom of OAB might influence on psychological stress for both men and women. Especially, female patients with OAB reported higher psychological stress levels than male patients with OAB. Among female patients with OAB, there were higher psychological stress levels in non-menopausal women.

Keywords: Bladder, Psychological stress, Gender
Increased expression of urothelial aquaporin-1,2 in caveolin-1 knockout mice urinary bladder

Ju Yong Oh, Sumin Son, Seong Jong Eun, Do Kyeong Lim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsung Park

Department of Urology, Chonnam National University Hospital, Chonnam National University Medical School, Gwangju, Korea

**Purpose:** We investigated the effect of the deletion of caveolin-1 (CAV1) using CAV1 knockout (KO) mice on the expression of aquaporin1, -2 (AQPI, 2) to confirm the relationship between them in the urothelium of urinary bladder.

**Methods:** The expression and cellular localization of AQPI, 2 and CAV1 were determined by Western blot and immunofluorescent study in the wild type and CAV1 KO mice urinary bladder.

**Results:** AQPI and CAV1 were co-expressed in the capillaries, arterioles and venules of the suburothelial layer. AQP2 was detected in the urothelium and suburothelial lamina propria. The AQPI, 2 protein expression were significantly increased in the CAV1 KO mice compared with wild type control (p<0.05).

**Conclusions:** There was significant increase in the expression of AQPI, 2 in the CAV1 KO mice urinary bladder. This finding may imply that AQPI, 2 and CAV1 might be closely related to the bladder signal activity and may have a functional role in bladder function.

**Keywords:** Aquaporin, Caveolin 1, Mice
Evaluation of a new technique using urethral sounds for tape adjustment in mid-urethral sling procedure for female stress urinary incontinence

최진호
단국의대 제일병원 비뇨의과학

Purpose: Proper tape adjustment is the important step in mid-urethral sling procedure for stress urinary incontinence (SUI) to avoid loosening or tension of tape, leading to the recurrence of SUI or voiding difficulty. We evaluated the efficacy of a new technique to adjust tape in mid-urethral sling procedure.

Materials and Methods: Fifty-two consecutive women with SUI underwent a Tension-free Vaginal Tape (TVT) by the same surgeon. They were randomly assigned to two groups. In the group 1 (n=26), the tape adjustment was performed in a conventional manner, leaving a Metzenbaum scissors between the mesh and urethra. In the group 2 (n=26), urethral sounds was inserted into urethra and pulled down as far as possible during the removal of a plastic sheath, which is required to identify the range of urethral mobility. Then, after removing sounds, the tape was positioned close to the urethra without tension to make sure there was no space between the mesh and urethra. The immediate postoperative results and the results at 1 week and 1 month, in terms of continence and urethral obstruction, were compared.

Results: Objective and subjective continence rates were 100% (26/26) and 96.2% (1/26) of patients in each group, respectively. A number of urethral catheterization for measuring post-voiding residual volume (2.6±1.2 vs. 1.7±1.1 mL, P=0.002) and post-voiding residual volume (95.7±80.9 vs. 53.4±42.4 mL, P=0.03) at day 1 were higher in group 1. Transient urinary retention (7.7 vs. 0%) and post-voiding residual urine >50 mL (38.5 vs. 19.2% on day 1, 46.2 vs. 26.9% at 1 week, and 34.6 vs. 7.7% at 1 month, respectively) were more frequent in group 1. Three patients in group 1 needed sling loosening in a conservative manner using urethral sounds. No differences were observed in age, body mass index, parity, existence of menopause, presence of storage symptoms, severity index of urinary incontinence, preoperative urodynamic study parameters, operation time, or hospital stay between two groups.

Conclusions: The technique appears to decrease the rate of voiding difficulty and urinary retention compared to the conventional technique. The technique enables identification of the variable degree of urethral mobility in individual patients and desired placement of tape, leading to proper urethral coaptation. The technique may be helpful, especially for inexperienced surgeons.

Keywords: 복압성요실금, 중부요도슬링, 테이프 조절
만성 요로 유출, 난이치과 및 신경처치의학 P-058

방광 유출, 척수손상, TGF-β1

목적: Nintedanib은 VEGF, FGF, PDGF 수용체를 동시에 차단하는 길항제로 폐렴이 유발되는 질환 치료제로 사용되고 있다. 척수손상 후에서 배뇨구역으로 인한 방광의 유출은 HIF-1 발현을 증가시켜 TGF-β1과 같은 성장인자가 생성을 유도하고 이 과정에서 방광의 섬유화를 유발할 수 있다. 이에 저자들은 nintedanib을 이용하여 척수손상 후에서 발생한 배뇨장애가 호전될 수 있는지 알아보았다.

대상 및 방법: 12주의 female C57BL/6 쥐를 3군으로 나누었다. A군은 SI (spinal intact), B와 C군은 T8/9 척수를 절단하면서 2주가 경과한 후부터 2주간 vehicle을 투여하거나(B군), nintedanib을 투여했다(C군). 처음 척수손상으로부터 4주째에 awake cystometry를 시행하였고, 이후 방광조직을 채취하여 HIF-1, VEGF, FGF-1, TGF-β1, Col la, Col 3a mRNA 발현정도를 RT-PCR을 이용해 정량하였다.

결과: CMG에서 ICI (intercontractional interval), NVC (non-voiding contractions), voided volume, voiding efficiency 등의 지표가 C군에서 호전되었다(Fig.1). TGF-β1의 경우 A군보다 B군에서 증가하였으나 C군에서 다시 감소하였다(Fig. 2). VEGF, FGF, collagen (la, 3a)는 A군과 비교하여 B군에서 증가하는 않으나, nintedanib 투여 후 C군에서 감소하였다. HIF-1의 경우 A군과 비교하여 B군에서 증가하였으나, nintedanib 투여 후 변화는 없었다.

결론: 척수손상 후에서 nintedanib의 투여 후 저장증상 및 배뇨증상이 모두 향상된 것을 보여주었다. 이것은 TGF-β1, VEGF, FGF와 같은 성장인자에 감소뿐만 아니라 col la, col 3a와 같은 collagen 전사체의 감소도 볼 때, 섬유화 정도의 변화도 관련된 것으로 추정된다. 따라서 섬유화와 관련된 성장인자를 억제하는 것은 척수손상 후에서 신경성 배뇨장애나 bladder remodelling을 치료하는 새로운 target이 될 수 있을 것이다.

Keywords: 방광섬유화, 척수손상, TGF-β1
Effect of preoperative period and pretreatment on the surgical outcomes of vesicovaginal fistula

Jeong Zoo Lee, Hyeon Woo Kim, Si Kyun Park
부산의대 비뇨의학과학교실

**Purpose:** The purpose of this study was to evaluate the surgical outcomes of Vesicovaginal Fistula according to the preoperative period and pretreatment.

**Objective & Methods:** The medical records of 16 patients who underwent vesicovaginal fistula repair from March 2007 to June 2015 were retrospectively reviewed. The data such as age of the patients at operation, the cause, size and location of the fistula, presence of coexisting injuries, preoperative period, surgical method and its success rate, duration of postoperative catheterization, and complications were investigated.

**Results:** The mean preoperative period was 45.23±108.92 months, and estrogen pretreatment was performed in 7 (43.75%) patients. Transvesical and transvaginal surgical approach was performed in 10 (62.5%) and 6 cases (37.5%), respectively. Mean hospital stay, operative time, and duration of catheterization were 24.43±14.91 days, 195.92±62.71 minutes, and 19.83±3.15 days, respectively.

**Conclusions:** Recently, vesicovaginal fistula repair is tended to be performed early as possible without observation period, and such early repair is tended to have a higher success rate than delayed surgery.

**Keywords:** 방광질루
Perceptions of condom fit and feel in young men

Seong Jong Eun, Sumin Son, Tae Hee Kim, Jae Hyeon Kim, Yang Hyun Cho, Myung Soo Kim, Ho Seok Chung, Eu Chang Hwang, Kyung Jin Oh, Sun-Ouck Kim, Seung Il Jung, Taek Won Kang, Dong Deuk Kwon, Kwangsung Park
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Introduction: Male condoms have long been used as the most practical and effective tool for prevention of sexually transmitted infections and unintended pregnancies. However, they are designed without considering individual penile lengths or thickness, which resulted in problems of discomfort in wearing condoms. The purpose of this study was to investigate the experiences of young Korean men when wearing condoms specifically focusing on size and feeling.

Methods: A total of 88 young men participated in the survey. Participants completed the Condom Fit and Feel Scale and measures related to demographics and condom use during sexual interactions within the past 90 days. All subjects were heterosexual and mean age was 26 years old (range: 20-30).

Results: Although majority of the men reported that the condoms fit fine and comfortable, some men reported various problems with the fit and feel of the condoms. Specifically, 11.4% of men reported that condoms are too long, 5.7% too short, 15.9% too tight, and 2.3% reported that condoms were too loose.

Conclusions: These results showed the needs to manufacture condoms which have better fitting and more comfort for Korean men.

Keywords: Condoms, Condom use, Condom fit, Condom feel

| Table 1. Proportion of participants items on The Condom Fit and Feel Scale (N=88) |
|---------------------------------|--------------------|
| Scale items by subscale         | N(%)               |
| Condoms fit my penis just fine  | 38(43.2)            |
| Condoms are too long for my penis | 10(11.4)           |
| Condoms are too short for my penis | 5(5.7)             |
| Condoms are too tight on my penis | 14(15.9)           |
| Condoms are too loose on my penis | 2(2.3)             |
Ameliorative effects of DA- 9401 on Adriamycin-induced testicular toxicity

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Objective: To investigate a possible protective role of DA- 9401 on Adriamycin (ADR)-induced testicular and spermatozoal toxicity associated with the oxidative stress.

Material and Methods: Fifty healthy 8-week-old male Sprague-Dawley rats were equally divided into five groups. The control group (CTR) received normal saline. Animal in DA-100 group received only (DA- 9401 100 mg/kg). Animal in adriamycin group (ADR) received only adriamycin (2 mg/kg), while the combination of ADR and DA- 9401 was given to ADR + DA-100 group (DA- 9401 100 mg/kg) and ADR + DA-200 group (DA- 9401 200 mg/kg). At the end of the 8-week treatment period, reproductive organ weights, epididymal sperm parameters, histopathological changes, Serum testosterone, serum LH and FSH level, testicular tissue interleukin-6, TNF-α, and oxidative testicular toxicity were investigated.

Results: DA- 9401 administration to ADR-treated rats provided significant improvements in ADR-induced increased interleukin-6, TNF-α, MDA level, ROS/RNS level and significantly improvements in the decreased reproductive organ weights, Johnsen’s score, spermatogenic cell density, sperm count and sperm motility, serum testosterone concentration, serum LH and FSH level, testicular SOD, catalase, GPx. This study suggests that adriamycin treatment markedly impaired testicular function and DA-9401 has protective effect on ADR-induced testicular lipid peroxidation.

Keywords: Adriamycin, Sperm motility, Testicular function
Could MKS has a favorable effects in varicocele induced infertility on SD rats?

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Objective: The purpose of this study is to investigate the efficacy of MKS in the regulation of infertility in a rat varicocele (VC) model and mechanism of reactive oxygen species (ROS)-based endoplasmic reticulum (ER) stress

Material and Methods: MKS is a natural Chinese medicinal herb extracts of pure compounds: monotropin from Morinda officinalis, kaempferol 3-o-glucoside from Coscuta chinensis and spiraeoside from Allium cepa in a ratio of 6.69: 0.41: 3.61. Four groups were included: control (CTR), MKS group (mks 200 mg/kg/day), Varicocele group (VC), VC + MKS 200 group (mks 200 mg/kg/day). Sprague–Dawley rats underwent VC surgery. Reproductive organ weight, Sperm motility and counts, Serum Testosterone, testicular tissue ROS/RNS, interleukin-6, TNF-α and, Spermatogenic cell density, Johnsen score were evaluated.

Results: The Sperm motility and counts, Johnsen’s score, spermatogenic cell density and serum testosterone improved significantly in the VC + MKS 200 group compared with the VC group, Testicular interleukin-6 and TNF-α decreased significantly in the VC + MKS 200 groups compared with the VC. In conclusion MKS repaired the damaged seminiferous epithelium and reduces testicular levels of cytokines, oxidative stress markers and might be used to treat infertility that did not completely improve after varicocelectomy.

Keywords: Varicocele, Endoplasmic reticulum stress, Infertility
Infertility & Sexual Dysfunction  
P-063

Does the stump size in vasovasostomy can be a predictive factor to improve the outcomes of semen analysis associated with vasal patency?

장재윤, 장준보, 최재영, 고영휘, 송필현, 정희창, 문기학  
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Introduction: Vasal patency, defined as the return of sperm in the ejaculation after the vasectomy reversal, is considered the best parameter for comparing the outcome of vasovasostomy. Post-vasectomy stump can be thought that it is also a factor to influence vasal patency. Thus, we evaluated the preoperative and intraoperative factors including post-vasectomy stump associated with vasal patency after vasovasostomy.

Material and Methods: From February 2000 to 2016, we retrospectively reviewed 139 consecutive vasovasostomy procedures performed by a single surgeon. Excluding 55 patients (39 has lost follow up visiting and 16 refused semen analysis or failed to collect semen), 84 patients who performed semen analysis at 1 month after surgery were enrolled in this study. Vasal patency was represented by variables of semen analysis such as motility, morphology and the number of spermatozoa. The size of stump was measured by its length and diameter. The correlations between semen analysis and clinical variables including vasal obstruction interval, leukocyte differential count, and median size of bilateral stump were analyzed in univariable and multivariable method.

Results: The mean age (±SD) was 32.1±0.8 years and mean obstructive interval was 7.8±0.6 years. Clinical variables including vasal obstruction interval, leukocyte differential count and length of stump were no statistically significant association with semen analysis parameters. However, the diameter of stump was positively correlated with motility and morphology of semen analysis (rho=0.474, p<0.0001 vs rho=0.349, p=0.001). In linear regression model, diameter of stump was sole independent factor associated with motility of semen (B=27.843, p=0.003).

Conclusion: Our findings demonstrated that increased stump diameter was improved the outcomes of semen analysis after vasovasostomy. However, additional prospective studies with larger numbers of patients should be done to further define its clinical significance.

Keywords: 정관복원술, 남성불임
남성갱년기를 동반한 만성콩팥병 환자에서 테스토스테론 보충요법이 삶의 질에 미치는 영향

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목적: 본 연구에서는 남성갱년기(Testosterone deficiency, TD)를 동반한 만성콩팥병(Chronic kidney disease, CKD) 3-4기 환자에서 남성호르몬치료(testosterone replacement therapy, TRT)가 이들의 삶의 질에 미치는 영향 및 TRT의 안정성을 알아보고자 하였다.

대상 및 방법: TD로 진단(혈청 테스토스테론(TT)치가 350 mg/dl 미만이면서 갱년기 증상을 호소하는 경우)된 40명의 CKD 3-4기 남성을 두군으로 무작위 배정하여 1군은 3개월 동안 규칙적인 운동을 시행하도록 하였으며, 2군은 2% tostrex gel 60 mg/day를 하벅지 안쪽에 3개월간 도포하도록 하였다. 치료 전 후로 SF-36, AMS, IPSS 등의 증상 설문지와 CBC, BUN/Cr, AST/ALT, Glucose, CRP, 허혈성 혈관질환, PSA 등의 혈청학적 검사, 사구체여과율, 심전도 및 신장, 체중, 혈압, 체온 등의 활력징후 측정과 양손 악력을 측정하여 두 군을 비교하였다. Paired t-test와 independent t-test를 시행하여 치료 전 후의 유의한 변화 및 두 군간 차이를 확인하였고, p-value 0.05 미만을 통계적으로 유의한 것으로 간주하였다.

결과: 1군의 경우 3개월 후 처음과 비교하여 혈청 TT 수치, SF-36, AMS 및 IPSS 점수와 악력에 있어 유의한 변화를 보이지 않았다. 2군의 경우에는 3개월간의 TRT 이후 처음에 비해 혈청 TT, Hb, Hct의 유의한 상승을 확인할 수 있었고, 악력이 유의하게 증가하였다. 삶의 질과 관련된 SF-36점수와 갱년기 증상 점수인 AMS 점수, 배뇨증상과 관련된 IPSS 점수에서도 치료 후 유의한 향상을 확인할 수 있었다. 3개월째 두 군간의 비교에서도 TT, Hb, Hct, 악력 및 설문지 증상 점수의 유의한 차이를 확인할 수 있었다. 2군의 경우 TRT 이후 사구체여과율의 유의한 변화는 없었으며, 모든 참여자가 3개월의 시험 종료 이후에도 TRT를 시행받기 원하였다.

결론: TRT는 중증도 이상의 만성콩팥병 환자에서 특별한 부작용 없이 남성갱년기 증상은 물론 삶의 질을 유의하게 향상시키며 특히 만성콩팥병 환자에서 혈액 변형에도 좋은 효과를 가져다 줄 것으로 사료된다.

Keywords: 만성콩팥병, 남성갱년기, 테스토스테론, 삶의질
Hem-o-lok®에 발생한 요관의 결석

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서론: 요관결석은 비뇨의학과 질환 중 가장 흔한 질환의 하나로 재발율이 높다. 이전 요로계 수술력을 가진 환자에서 요로계에 남아있는 봉합사 등에 결석이 생기거나 방광에 삽입한 이물질에 요로결석이 발생하는 경우가 있다. 요관 결석 수술 과거력이 있는 환자들의 결석 내부에서 발견된 이물질에 대하여 보고하고자 한다.

증례: 8년전 좌측 상부요관 결석으로 타병원에서 복강경하 요관 결석 제거수술을 받은 41세 남환자가 2주 전 시작된 좌측 측복통로 내원하였다. 환자는 약 1주일 전 원거리의 병원에서 진료 후 수술을 권유 받았으나 연고지 관련으로 전원되었다. 환자는 내원 전 당뇨 진단으로 투약 중이었다.

일반뇨검사에서 Micro RBC 3-5/HPF, Micro WBC 5-10/HPF이었고 Creatinine 1.00 mg/dl (0.51-1.17) 외부 복부 단층촬영에서 수신증을 동반한 11 mm 크기의 좌측 상부 요관 결석과 작은 크기의 신장결석이 관찰되었다. 7.5 Fr ureteroscope를 이용하여 요관 결석을 확인하고 Holium laser을 이용하여 0.6 J, 10 Hz로 파쇄를 시행하였다. 파쇄를 시행하던 중 결석의 중앙 부위에서 더 이상의 파쇄가 되지 않아 결석의 주변부에 대해 파쇄를 시행하였다. 더 이상 파쇄가 되지 않고 요관경에서 whitish material로 관찰되었다. Foreign body forcep으로 제거를 시도하였다. 확인 결과 약 1 cm 크기 Hem-o-lok®로 확인되었다. 신장결석 제거까지 수술 시간은 1시간 25분 소요되었으며 6 Fr 24 cm double J stent를 삽입하고 수술을 마쳤으며 다음 날 별다른 합병증 없이 퇴원하였다. 3주 뒤 외래에서 요관 부목을 제거하였다.

요로계에서 흔히 발견되는 이물질로는 forgotten stent, suture material, nephrostomy tube, surgical mesh 등이다. 그러나 상대적으로 큰 Hem-o-lok®이 요관 결석 수술 시 발견되어 이물질의 사용에 더욱 주의를 기울여야 할 것으로 사료된다.

Keywords: 요관 결석, 이물질, 지혈 클립
체외충격파쇄석술 시 통증에 대한 영향인자에 관한 조사

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Introduction: 체외충격파쇄석술(Extracorporeal Shock Wave Lithotripsy, ESWL)은 요로결석의 치료에 가장 흔하게 적용되는 비침습적 치료법이다. 치료 성공률은 80~90% 정도로 이에 영향을 끼치는 다양한 인자들(크기, 위치, 정도 등)이 연구되어 왔으나 ESWL시 환자가 느끼는 통증에 대한 영향 인자는 아직 연구가 부족한 실정이다. 이에 본 저자들은 ESWL시 환자가 느끼는 통종에 대한 영향 인자들에 대해 분석하였다.

Materials and Methods: 2017년 3월에서 2017년 12월까지 본원에서 ESWL을 시행한 환자 중 설문지 응답한 138명의 환자를 대상으로 하였다. 설문지를 통해 성별, 나이, 키, 몸무게, 허리둘레 및 통증 점수(NRS scale)를 조사하였으며 KUB 소견 및 의무기록으로 결석의 위치와 크기, 사슬 전 진통제 투여 여부를 조사한 뒤 통증 점수를 중심으로 각 변수와의 관계를 통계학적으로 분석하였다. 이 중 연속 변수인 나이, 키, 몸무게, 허리둘레, 결석의 크기는 상관관계 분석을 시행하였고 성별, 진통제 투여 여부, 결석의 위치는 T-test를 통해 분석하였다. 모든 설문은 단일 술자가 단일 장비를 통해 시행하였다.

Results: 전체 대상 환자의 평균 연령은 53.38세였으며 남성 114명(82.6%), 여성 24명(17.4%)이었다. 통증 점수는 평균 4.47점이었다. 평균 신체 수치는 키 168.5 cm, 체중 72.7 kg, 허리둘레 89.4 cm이었다. Stone의 평균 크기는 7.32 mm이며 위치는 우측이 59(42.8%)명, 좌측 79(57.2%)명이었으며 level은 kidney 59명(42.8%), upper ureter 43명(31.2%), middle ureter 1명(0.7%), lower ureter 5명(3.6%), ureterovesical junction 26명(16.8%)이었다. 27명(19.6%)의 환자에서 시행 직전 진통제를 투여하였으며 111명(80.4%)에서는 전처치 없이 시행하였다. 상관관계 분석에서 신체 수치 중 체중(r=0.26), 허리둘레(r=0.11)에서 약한 양의 상관관계를 보였으며 그 외 나이(r=-0.07), 키(r=-0.01)는 뚜렷한 관계성을 보이지 않았다. T-test에서는 stone의 위치가 kidney (4.98)일 경우 ureter (4.04) 보다 통계적으로 유의하게(p=0.002) 통증 점수가 높은 것으로 나타났으며 그 외 남/여(r=0.01), 우측/ 좌측(4.24/4.65), 진통제 투여 여부(사용 시 4.78/비 사용 시 4.40)에서는 유의한 차이가 발견되지 않았다.

Conclusion: 본 연구 결과에서는 통증에 영향을 주는 인자로 체중과 허리둘레가 클수록 ESWL 시 느끼는 통증이 커지며 특히 kidney의 경우 ureter stone 보다 더 큰 통증을 느끼는 것으로 조사되었다. 본 연구를 바탕으로 비교적 체중이 많이 나가는 환자에서 kidney stone에 대한 ESWL 시행시 적극적인 통종 시술을 고려할 수 있을 것이다. 향후 영향 인자에 대한 추가적인 연구를 통하여 ESWL 시 환자가 받는 통증을 경감하는 데 기여할 수 있을 것이라 기대한다.

Keywords: 결석, 체외충격파쇄석술, 통증
Systematic review and meta-analysis to compare success rates of percutaneous nephrolithotomy versus miniature percutaneous nephrolithotomy: an update

조강수, 정해도, 함원식, 한용규, 나군호, 최영득, 이주용
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Purpose: Historically, miniature percutaneous nephrolithotomy (mPCNL) has been introduced for the treatment of pediatric patients with kidney stones. mPCNL has advantages over standard PCNL for blood loss, postoperative pain, and renal parenchymal damage, which are complications of larger instruments. We investigated to perform a systematic review and meta-analysis comparing stone-free rates between percutaneous nephrolithotomy (PCNL) and mPCNL using updated, more reliable evidence.

Materials and Methods: Randomized controlled trials comparing PCNL and mPCNL for renal stones were identified from electronic databases. Stone-free rates for the procedures were compared by qualitative and quantitative syntheses (meta-analyses). Outcome variables are shown as odds ratios (ORs) with 95% confidence intervals (CIs).

Results: Finally, eight articles were included in this study. Most recently published studies exhibited relatively low quality during quality assessment. Between mPCNL and PCNL (I²=51.0%, P=0.046), there was heterogeneity from each study. The Begg and Mazumdar rank correlation tests for each analysis showed no evidence of publication bias in the present meta-analysis between PCNL and mPCNL (P=0.805). Egger’s regression intercept tests also did not reveal any publication between PCNL and mPCNL (P=0.990). For the meta-analysis comparing success (stone-free) rates between PCNL and mPCNL, the forest plot using the random-effects model showed no difference with an OR of 0.89 (95% CI, 1.46–1.71; P=0.730).

Conclusions: mPCNL can be an effective procedure for selected patients with renal stones. In this meta-analysis, there was no difference of stone-free rate between PCNL and mPCNL.

Keywords: 경피적신절석술, 메타분석, 성공률
Digital videoscopic retrograde intrarenal surgeries for renal stones: time-to-maximal stone length ratio analysis

조강수, 정재용, 김종찬, 정해도, 함원식, 최영득, 이주용
연세의대 비뇨의학교실, 비뇨의과학연구소

**Purpose:** The aim of our study was to retrospectively analyze videoscopic RIRS cases performed by a single surgeon to treat patients with renal stones and to evaluate the factors associated with a stone-free status and learning curves for the procedure.

**Materials and Methods:** We analyzed the results of videoscopic RIRS in 100 patients who underwent primary treatment for renal stones from January 2015 to August 2016. Videoscopic RIRS were performed with URF-V and V2 flexible video uteroscopes (Olympus) or a FLEX-Xc flexible ureterorenoscope (Karl Storz). Non-contrast computed tomography was taken at 3 months postoperatively to confirm the absence of stones. The stone characteristics included the location, maximal stone length (MSL), stone heterogeneity index (SHI), and mean stone density (MSD). Fragmentation efficacy was calculated as operative time (min) divided by removed MSL (mm), and was evaluated in the sequential order of operations.

**Results:** The mean age of the total patient was 59.96±13.97 years. The mean MSL was 13.07±7.18 mm. The average MSD was 734.16±327.61 HU and the SHI was 240.99±119.59 HU. The mean operation time was 66.61±46.70 min considering each renal unit. The stone-free rate at 3 months post-surgery was 87%. The estimated cut-off of the time-to-MSL ratio below 5 min/mm was 50 (Fig. 1). Multivariate analyses indicated a lower MSD (OR: 0.998; 95% CI: 0.996–0.999; P=0.047) and the last 50 cases (OR 5.408, 95% CI 1.337–30.426; P=0.030) as independent predictors of stone-free status after videoscopic RIRS.

**Conclusion:** Low MSDs and the last 50 cases were significant predictors of stone-free rate in videoscopic RIRS.

**Keywords:** 신장결석, 역행성신장내결석수술, 성공률
Real-time simultaneous endoscopic combined intrarenal surgery with intermediate-supine position

조강수, 정해도, 김종찬, 안현규, 한웅규, 이주용
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**Purpose:** Endoscopic combined intrarenal surgery (ECIRS), consisting of simultaneous retrograde intrarenal surgery (RIRS) and percutaneous nephrolithotomy (PCNL), has been proposed as a new surgical treatment to overcome the disadvantages of RIRS and PCNL monotherapies in the treatment of renal stones. We will share the experiences and advantages of real-time simultaneous ECIRS, and introduce techniques to increase the stone-free rate.

**Materials and Methods:** We performed real-time simultaneous ECIRS on 10 adult patients from August–September 2017. An ECIRS was performed under general anesthesia with the patient in the intermediate-supine (Galdakao-modified supine Valdivia; GMSV) position. Using a preoperative nephrostomy tract, a hydrophilic guidewire was inserted into the renal pelvis and ureter. A retrograde 11/13 ureteral access sheath (UroPass, Olympus) was inserted through the Superstiff Guidewire. After installation of the ureteral access sheath, there were two safety hydrophilic guidewires leading from the nephrostomy and the urethra outside the ureteral access sheath. Under flexible ureterorenoscopic guidance, the tract was dilated using either an 18–Fr Ultraxx Nephrostomy Balloon, a metallic one-step dilator, or a 30–Fr NephroMax High Pressure Nephrostomy Balloon Catheter (Boston Scientific). Nephroscopes used included 24–Fr (Richard Wolf, Knittlingen, Germany), 15–Fr (Richard Wolf), or 12–Fr mini-nephroscope (Karl Storz Endoskope, Tuttingen, Germany).

**Results:** Seven patients were male and three were female, with an overall mean age of 62.60±9.35 years. Of the seven renal stone cases, three were right-sided, four were left-sided, and three were bilateral. Stone locations were midpole (n=2), lower pole (n=4), and mid- to lower pole (n=4). Three patients underwent simultaneous ipsilateral ECIRS and contralateral RIRS, and one patient underwent ipsilateral ureteroscopic lithotripsy. Mean operative time was 85.20±29.36 minutes, and patients were discharged on mean postoperative day 1.80±0.92. The stone-free rate was 100% in all cases. All patients underwent retrograde loop-tail ureteral stent insertion during ECIRS and no patients received a nephrostomy tube.

**Conclusions:** Real-time simultaneous ECIRS is an operation that can form a PCNL tract very safely and increase the post-surgical stone-free rate.

**Keywords:** 신장결석, 경피적신질석술, 역행성신장내경석술수술
Complication rate between extracorporeal shock wave lithotripsy and retrograde intrarenal surgery: an update of systematic review and meta-analysis

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목적: 신장결석의 치료로 retrograde intrarenal surgery (RIRS), percutaneous nephrolithotomy (PCNL), extracorporeal shock wave lithotripsy가 시행되고 있다. Lower pole stone을 제외한 이 중, 2 cm 미만의 결석에 대하여 RIRS와 ESWL이 표준치료로 제시되고 있다. 기존 연구에서는 RIRS와 ESWL의 침습성에 대하여 논란이 있었다. 이에 저자들은 지금까지 출판된 연구들을 바탕으로 RIRS와 ESWL의 합병증 발생률에 대한 체계적 문헌고찰 및 메타분석을 시행하였다.


결과: 전체 12개의 연구가 신장결석에 대하여 ESWL 및 RIRS의 complication rate를 비교하였다. 대상 연구들의 publication bias 분석을 위하여 시행한 funnel plot 상 의미있는 publication bias는 관찰되지 않았다(Fig. 1). Clavian–Dindo classification 1, 2 및 3, 4에서 heterogeneity는 관찰되지 않았다. Clavian–Dindo classification 1, 2에 대한 분석에서 ESWL은 1258명 중 85명이, RIRS는 615명 중 57명이 발생하였으며, 통계적으로 차이를 보이지 않았다(OR 0.93; 95% CI 0.64-1.35; P=0.69). Clavian–Dindo classification 3, 4에 대한 결과 역시 ESWL과 RIRS는 차이를 보이지 않았다(OR 0.67; 95% CI 0.34-1.34; P=0.26). 전체 합병증 발생률에서도 ESWL 2516명 중 105명, RIRS 1230명 중 75명으로 차이를 보이지 않았다(OR 0.86; 95% CI 0.62-1.20; P=0.37).

결론: 신장결석의 치료로 시술되는 RIRS와 ESWL은 치료 합병증 발생률에 있어 차이를 보이지 않았다.

Keywords: 체외충격파쇄석술, 역행성신장내결석수술, 메타분석
요로결석환자에서 클라우드시스템 기반 닥터닝 알고리듬 개발을 통한 초저선량 NECT 자동판독기술의 개발

지병훈, 문영태, 김경도, 명순철, 김태형, 장인호, 김진욱
중앙대의 비뇨의학과

요로결석의 진단과 치료에 있어 반복적으로 복부 CT를 시행하는 경우가 많고 치료를 위한 체외충격파쇄석술 후에도 방사선에 피폭이 되어 누적 방사선 피폭량에 대한 우려가 최근 높아지고 있으며 저선량 NECT 및 초저선량 NECT의 유용성과 protocol에 대한 많은 연구들이 이루어지고 있음. 또한 요로결석에 대한 치료는 전적으로 비뇨기와 전문의 및 전공의가 수행하게 되는데, 비뇨기과 전공의의 지진율의 감소로 인해 암호 진료 시공간을 적절하게 하는 상황이 발생되고 있음. 따라서 이로 인한 요로결석 환자에 대한 오진의 증가와, 오진으로 인한 의료비의 지출이 증가될 것으로 우려되는 바, 이를 극복하기 위하여 지역적 한계를 극복할 수 있는 클라우드 시스템과 NECT 상 요로결석의 진단율을 높일 수 있는 닥터닝 기반 NECT 자동판독 알고리듬이 필요함.

이에 본 연구의 목적은 요로결석환자에서 클라우드시스템 기반 닥터닝 알고리듬 개발을 통한 초저선량 NECT 자동판독기술을 개발하는 데에 있으며, 요로결석이 의심되는 병원 환자에서 방사선조사량을 기존의 복부CT보다 10% 이하로 줄이는 초저선량 비조영 복부단층촬영(ULD NECT)을 임상에 적용하여 자동으로 판독한 뒤, 클라우드 환경 하에 이를 인터넷으로 제공하여 신속한 진단 및 치료를 제공하고자 한다.

KAIST 연구팀과 공동으로 촉망은 Convoluted neural network (CNN) 구조를 개량하여 2016년 1월부터 12월까지 중앙대학교병원에 내원하여 요로결석 의심 환자들이 NECT를 시행하였던 1085명의 환자들 중 요로결석이 확인된 811명의 환자를 대상으로 하였고, 결석이 있는 5268개의 CT image와 결석 없는 4980개의 CT image를 무작위로 추출하여 탐색연구를 시행하였다. 이 중 8196개의 image에 대해서 먼저 training을 시행하여 AUC값을 기반으로 하여 가장 적합한 학습모델을 추출한 뒤, 나머지 1079개의 image에 대해 validation을 시행하였다. 결석이 있는 551개의 image에 대해 100%의 양성 예측률을 보였고, 결석이 없는 528개의 image 중에서 527개를 결석이 없는 것으로 판독하여 99.8%의 음성 예측률을 보였다. 주리 많은 환자군을 대상으로 확대하고, 향후 저선량 및 초저선량 NECT에 대해서도 추가적 연구를 시행하여 클라우드 시스템에서 닥터닝 기반 요로결석의 진단 시스템을 확립하게 되면 지역적, 인적 한계를 극복하여 의료비 감소 및 국민보건에 기여할 것으로 기대된다.

Keywords: 요로결석, 인공지능, 자동판독
Comparison of the hydrocelectomy through the inguinal versus scrotal approach for the treatment of hydrocele in boys

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Purpose: The successful scrotal incision orchiopexy has been reported regardless of patency of the processus vaginalis. We evaluated and compared the outcomes between traditional inguinal approach group with scrotal approach group for treatment of hydrocele in boys.

Methods: This prospective study was conducted on 313 boys who presented to the Chonnam National University Hospital with hydrocele and underwent hydrocelectomy during the period from May 2011 to December 2016. 128 Boys with inguinal approach group and 185 scrotal approach group were enrolled in this study. The comparison was made between the two groups as regards the operative outcomes (operative time, hospital stay day, combined cryptorchidism), and postoperative complications and recurrence rate.

Results: The mean operative time was 91.61 (50-150) min in the inguinal approach group and 75.69 (44-150) min in the scrotal approach group. The mean length of hospital stay day was 4.2 (3-6) day in the inguinal approach group and 4.08 (3-10) day in the scrotal approach group. Hydrocelectomy through the scrotal approach was associated with short operative time (P < 0.001) and low hospital stay day (P=0.031) compared to the inguinal approach group. Communicating hydrocele type case was 90 (70.31%) in the inguinal approach group and 157 (84.86%) in the scrotal approach group. Postoperative complication rate was lower in scrotal approach group compared with inguinal approach group (3.42% vs. 6.25%). Postoperative recurrence rate was similar between the two groups (0.78% vs. 1.08%).

Conclusions: Hydrocelectomy through the scrotal approach in boys is associated with shorter operative time and lower hospital stay day with comparable postoperative complication rate compared to the inguinal approach group. Thus, the scrotal incision technique is an effective way for the treatment of hydrocele in boys.

Keywords: Hydrocelectomy, Inguinal, Scrotal

| Table 3. Comparison of postoperative complications between the two groups |
|---------------------------------|---------------------------------|---------------------------------|-------------------|
| Variables                        | Inguinal approach               | Scrotal approach               | p value           |
| Wound infection, N (%)           | 1 (0.78%)                       | 3 (1.62%)                      | 0.103             |
| Scrotal hematoma, N (%)          | 2 (1.58%)                       | 0 (0%)                         | 0.077             |
| Wound dehiscence, N (%)          | 1 (0.78%)                       | 3 (1.62%)                      | 0.051             |
| Orchitis/Epididymitis, N (%)     | 4 (3.12%)                       | 0 (0%)                         | 0.262             |
| Decreased testicular size, N (%) | 0 (0%)                          | 0 (0%)                         | 0.187             |
| Recurrence, N (%)                | 1 (0.78%)                       | 2 (1.08%)                      | 0.150             |

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Comparison of testis volume before and after hydrocelectomy measured by ultrasonography in boys

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Purpose: The purpose of this study is to investigate whether there is an association between hydroceles and testicular volume in boys.

Methods: This prospective study was conducted on 313 boys who presented to the Chonnam National University Hospital with hydrocele and underwent hydrocelectomy during the period from May 2011 to December 2016. Comparison was made between preoperative and postoperative testis volume measured by ultrasonography.

Results: Mean operation time and hospital stay day was 81.89 min and 4.13 day. Among them, the number of communicating hydrocele was 247 (78.91%) and non-communicating hydrocele was 36 (11.50%). Mean follow up period was 3.58 months, postoperative complication rate was 5.43%. There was significant increase in mean testicular volume after hydrocelectomy, especially before the age of 3 years old compared to the boys older than 3 years old.

Conclusions: This study shows that there is an association between hydroceles and testicular volume in boys. Clinicians should be aware that there is a chance to increase of testicular volume after hydrocelectomy when surgical correction was made before 3 years old.

Keywords: Hydrocelectomy, Testis volume, Age

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>N</th>
<th>Pre-op testis volume, ml</th>
<th>Post-op testis volume, ml</th>
<th>Volume change, ml</th>
<th>p value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3</td>
<td>120</td>
<td>1.083 ± 0.378</td>
<td>1.184 ± 0.472</td>
<td>-0.103 ± 0.056</td>
<td>0.047</td>
</tr>
<tr>
<td>≥3</td>
<td>193</td>
<td>2.276 ± 2.114</td>
<td>2.202 ± 1.581</td>
<td>-0.035 ± 0.023</td>
<td>0.021</td>
</tr>
</tbody>
</table>

Data are presented as means ± SD, *p<0.018 comparison between the age groups
Evaluation and outcome of stepwise approach to the children with coexisting dilating vesicoureteral reflux and ureteropelvic junction obstruction

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Introduction & Objectives: If severe urinary bladder ureteral reflux (VUR) is suspected to be accompanied by ureteral obstruction, it is difficult to determine which should be treated first. The purpose of this study is to analyze the treatment sequence and progress of VUR and UPJO accompanying moderate VUR and UPJO.

Materials & Methods: From January 2007 to May 2017, we analyzed the patients diagnosed with UPJO among patients younger than 20 years of age using ABLE (Asan Biomedical Research Environment). Seven patients with a diagnosis of UPJO with moderate to severe VUR grade 3 or above and diuretic MAG3 renal scan were analyzed.

Results: From 2007 to 2017, 2,226 patients were diagnosed with hydronephrosis. Of these, 77 patients (3.4%) underwent Ureteroneocystostomy and 236 patients (10.4%) underwent pyeloplasty. 820 patients were diagnosed with VUR, 182 (22.2%) patients of them underwent Ureteroneocystostomy and 7 (0.9%) patients underwent pyeloplasty. Among them, a total of 7 patients with UPJO on the ipsilateral side of the ureteral reflux (grade 3 or higher) confirmed by excretory renal scan (diuretic MAG3 renal scan) and VCUG. The mean age was 4 years old (range 1 to 8 years). The mean renal function of the patients was 47.4% (24.2~48.2%), and the T1/2 time was more than 20 minutes. Three patients underwent ureteral bladder anastomosis after pyeloplasty, and excretion half-life was reduced from 2 to 8 minutes and 2.5 minutes after the surgical treatment. In all patients, relative renal function was not significantly different from 40.6% to 40.3%, and severe VUR improved in all patients. The relative renal function was 47.6% in 2 patients except single kidney patient, and minimal improvement were observed as 49.5% after surgical management. The patients who underwent Ureteroneocystostomy were observed with improvement of VUR as grade 4 postoperatively, also improvement in T1/2 time 14 minutes and relative renal function 26.2%. One patient (grade 5 VUR, 24% DRF) underwent ureteroneocystostomy. The postoperative VUR improved to grade 4, and the MAG3 had a half-life of 14 minutes and a relative renal function of 26.2%.

Conclusions: In cases of moderate to severe VUR accompanied by unusual UPJO, ureteral bladder anastomosis alone may resolve the obstruction, however for the severe UPJO, it is necessary to perform ureteral bladder anastomosis after pyeloplasty.

Keywords: VUR, Ureteral obstruction, Ureteral bladder anastomosis
Trauma, Infection and Others

Factors causing sepsis versus septic shock with obstructive urolithiasis are different

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Background: Complicated acute pyelonephritis (APN) is a life-threatening condition that requires immediate intervention. This study examined the characteristics of acute pyelonephritis with ureteral stone in our institution for 11 years.

Methods: We retrospectively reviewed 85 patients diagnosed with APN complicated by ureteral stone from December 2006 to July 2017. The patients with concurrent renal stone, multiple ureteral stones, ureteral stricture, ureter cancer, and urogenital anomalies including vesicoureteral reflux were excluded. The clinical characteristics including age, sex, underlying disease, medical history, stone characteristics, initial laboratory data and the procedure to correct urinary obstruction were summarized, and the risk factors for sepsis and septic shock were analyzed.

Results: At initial presentation, sepsis was diagnosed in 62 patients and 17 patients suffered from septic shock among them. There was no event of disease-related death. Procalcitonin (PCT), serum CRP, leukocytosis (p<0.001), elevated CRP (p=0.006) and low albumin (p=0.038) were significant risk factors for progression to sepsis. The absence of HTN (p=0.047), thrombocytopenia (p=0.006) and decreased ESR (p=0.003), elevated BUN (p=0.016) and positive blood culture (p=0.018) were significant predictors for progression to septic shock.

Conclusions: Risk factors for progression from APN to sepsis and from sepsis to septic shock are different. Various factors should be considered to determine treatment options based on the severity of complicated APN with ureteral stone.

Keywords: Urolithiasis, Sepsis, Septic shock

Withdrawal
Which method is suitable to maximize the clinical effect of temporary urinary diversion for acute pyelonephritis with complicated ureteral stone: double J (DJ) stenting or percutaneous nephrostomy (PCN)

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We aimed to compare the clinical benefit of double J (DJ) ureteral stenting and percutaneous nephrostomy (PCN) in the management of acute pyelonephritis (APN) with complicated ureteral stone.

Total 85 patients diagnosed with complicated APN from December 2006 to July 2017 were reviewed. Among them, 61 patients who underwent DJ or PCN for the management of ureteral obstruction were enrolled in our study. Some of participants were excluded in cases of concurrent renal stone, multiple ureteral stones, ureteral stricture, malignancy and anatomical anomalies. Patient, stone characteristics and peri-procedural laboratory tests of the groups were compared. And the success rate depending on the type of urinary diversion and the presence of immediate complication were analyzed.

19 patients underwent DJ stenting while 42 patients underwent PCN to manage complicated APN. There was no event of failed procedure or immediate complication requiring subsequent intervention (Clavien grade II–V). Urologists preferred PCN to DJ stenting in a situation of elevated serum creatinine (p=0.001) and higher CRP (p <0.001). It seems that indicative parameters for renal injury and septic condition (WBC count, segment neutrophil and creatinine) showed immediate improvement while CRP did not (Table 2). However, all markers were not significant statistically (p=0.701, 0.962, 0.288, 0.360, respectively).

Both DJ stenting and PCN are safe and feasible method for the management of complicated APN. With experienced urologist or radiologist, there may be little danger of persistent renal failure or other complications.

Keywords: Ureter stone, PCN, APN
Laminin and PDGF-BB promote neural differentiation of human urine-derived stem cells

Introduction: Recently, stem cells are a promising cell source for replacement of injured neurons in field of regenerative medicine. Urine-derived stem cells (USCs) are considered as a promising cell source capable of neural differentiation. In addition, specific growth factors and extracellular matrix are essential for enhancing their neural differentiation efficiency. In this study, we investigated the possibility of neural differentiation of USCs and the role of laminin and platelet-derived growth factor BB (PDGF-BB) as promoting factors.

Materials and Methods: USCs were isolated from fresh urine of healthy donors (n=8) and investigated biological characterization. USCs were characterized by chromosome stability, proliferation rate, colony-forming unit, and cell surface markers. To examine the effects of laminin and PDGF-BB for the neural differentiation, USCs were cultured for 14 days in neural differentiation media supplemented with/without laminin and/or PDGF-BB. RT-PCR, flow cytometry analysis, and immunocytochemistry were used to identify the expression of neural markers.

Results: Cultured USCs were adherent to the plate and their morphology was similar to the cobblestone. These cells showed chromosome stability, were rapidly proliferated, had colony forming capacity, and expressed mesenchymal stem cell markers. After neural induction, the cells showed neuron-like morphological change and high expression level of neural markers. In addition, laminin and PDGF-BB respectively promoted the neural differentiation of USCs and the combination of laminin and PDGF-BB showed a synergistic effect for the neural differentiation of USCs.

Conclusions: USCs are noteworthy cell source in the field of neural regeneration and laminin and PDGF-BB promote their neural differentiation efficiency.

Keywords: Urine-derived stem cells, Laminin, Neuronal differentiation
Ultimate fate of recurrent cystitis caused by ESBL-producing E. coli: a prospective longitudinal study

정형국, 이동현, 안순태, 김종욱, 박홍석, 문두건, 오미미
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Objectives: To monitor longitudinally female patients with urinary tract infections (UTIs) due to extended-spectrum b-lactamase (ESBL)-producing Escherichia coli (E. coli) and evaluated the recurrence rate and causative organism once UTI recurred during follow up.

Materials & Methods: Between Jan 2014 and Dec 2014, we enrolled the female patients with UTIs caused by ESBL-producing E. coli, and each patient was followed up 24 months longitudinally. Clinical and microbiological data were collected. During observation period, we investigated the recurrence rate per se and recurrence rate of UTIs due to ESBL producing E. coli. Also we evaluated the risk factors for recurrence of UTIs due to ESBL producing UTIs during follow up.

Results: Among 127 patients who were enrolled initially, total 106 patients complete the study. Total 45 (45/106, 42.5%) patients experienced UTI recur during observation period and among those patients 34 (34/45, 75.6%) patients recurred with ESBL-producing E. coli. The recurrences with ESBL-producing E. coli were more frequent in patients who had history of cephalosporin use (Table 1). In multivariate analysis, history of cephalosporin use was independent risk factors of recurrence UTIs with ESBL-producing E. coli compared with those who recurred with ESBL negative E. coli (OR 12.92, CI 1.45–115.6, P=0.022).

Conclusion: About 75% of patients initially caused by ESBL producing E. coli recurred with ESBL producing E. coli during follow up. The history of cephalosporin use was identified as the risk factor of UTI recurrence caused by ESBL-producing E. coli in our cohort. Thus, recurrent cystitis patients who have the history of cephalosporin use and UTIs with ESBL-producing E. coli are warranted to be treated based on antibiotic susceptibility profiles of the previous ESBL-producing E. coli.

Keywords: 요로 감염, 광범위 베타-락탐계 항생제 분해효소, 대장균

| Table 1. Comparison of clinical and microbiological factors between UTIs recurrence with ESBL-producing E.coli and those with non ESBL-producing organisms |
|-------------------------------|-------------------------------|------------------|
| UTIs recur with ESBL (N=34) | UTIs recur with non-ESBL (N=12) | P value  |
| Age | 67.3 ± 12.1 | 65.6 ± 9.6 | 0.311 |
| DM | 8 (23.5%) | 3 (33.3%) | 0.549 |
| Recurrent UTIs history | 25 (73.5%) | 4 (44.4%) | 0.098 |
| Mean No. of UTIs | 3.7 ± 3.7 | 3.1 ± 3.2 | 0.519 |
| Quinolone use | 20 (58.8%) | 3 (33.3%) | 0.173 |
| Cephalosporin use | 21 (61.8%) | 1 (11.10%) | 0.007 |
Spontaneous perirenal (retroperitoneal) hemorrhage (Wunderlich syndrome): analysis of 22 cases

김종욱, 이동현, 정형국, 안순태, 오미미, 문두건, 박홍석
고려대학교 구로병원 비뇨의학과

Objectives: To analyze the characteristics, etiology, and treatment of a series of patients with spontaneous perirenal hemorrhage (Wunderlich syndrome, WS).

Materials and Methods: We retrospectively reviewed the records of 20 patients hospitalized for WS in a tertiary urological center between 2011 and 2016. All patients were evaluated for perirenal hemorrhage observed on computed tomography (CT) in the emergency department. Clinical variables (age, underlying diseases, symptoms, shock, and hospitalization period), laboratory test results, and radiological and pathological results were reviewed.

Results: The series included 22 events from 20 patients. Eleven patients (55%) had visible renal lesions and associated hematoma, and 9 showed only perirenal hematoma. Six patients (35%) showed definitive findings of angio-myolipoma on CT and did not undergo surgery. Including 4 patients with shock (systolic blood pressure < 90 mmHg), 11 patients (55%) underwent exploration and total nephrectomy. Pathological examination showed 3 cases (15%) of renal cell carcinoma (1 associated with polycystic kidney disease), 3 cases of renal cysts (1 associated with polycystic kidney disease), 1 case of extraskeletal Ewing sarcoma, 1 case of malignant perivascular epithelioid cell tumor (PEComa), and 4 cases of chronic pyelonephritis or no pathologic diagnosis. Male sex was significantly associated with prediction of renal cell carcinoma in the patients with WS.

Conclusions: Renal masses are the main cause of WS, and CT is the diagnostic procedure of choice. Surgical treatment is preferred in patients with a diagnosed renal malignancy and in cases of hemodynamic instability.

Keywords: 운더리 증후군, 콩팥 주위 출혈, 자발성
요로 폐색이 동반된 급성 신우신염에서 경피적 신장 창냄술을 시행한 경우의 요배상 검사상 항생제 감수성

김기호, 권세윤, 서영진, 이경섭
동국의대 경주병원 비뇨의학과

목적: 요로 폐색이 동반된 급성 신우신염은 패혈성 쇼크로 진행할 수 있는 위험한 질환이다. 이에 저자들은 요로 폐색이 동반된 급성 신우신염에서 경피적 신장 창냄술(percutaneous nephrostomy, PCN)을 시행한 경우, 요배양 검사상 동정된 균의 항생제 감수성을 연구하였다.

대상 및 방법: 2000년 1월부터 2015년 7월까지 경주 동국대학교병원 비뇨기과에서 요로 폐색이 동반된 급성 신우신염으로 진단 받은 환자 중 PCN을 시행 후 요배양 검사를 실시한 20명의 환자를 대상으로 후향적 조사를 하였다.

결과: 진단 시 환자들의 나이는 68.8±11.8세였고 체온은 38.2±1.0°C였고 serum WBC는 14.6±8.8×10³ g/dl이었다. C-반응성 단백은 11.1±9.2 g/ml이었고, 혈 중 크레아티닌은 1.7±1.2 g/ml이었다. amikacin, amoxicillin-clavulanic acid, cefotaxime, cefoxitin, ciprofloxacin, piperacillin-tazobactam, imipenem의 항생제 감수성은 100.0%, 66.7%, 69.2%, 75.0%, 21.4%, 84.6%, 93.3%이었다. 요배양 검사상 동정된 균에서 광범위 베타 락탐계 항생제 분해효소(extended spectrum β lactamase, ESBL)는 80%에서 음성을 보였다(8/10).

결론: 요로 폐색이 동반된 급성 신우신염 환자에서 PCN을 시행한 경우 요배양 검사상 동정된 균의 항생제 감수성을 연구한 결과 1차 약제로 사용하는 quinolone계열의 감수성이 매우 낮았고, 3세대 cephalosporin계열의 항생제도 낮은 감수성을 보였다. 하지만 본 연구는 후향적이며 증례 수가 부족하다는 한계점이 있어 추후 전향적으로 더 많은 증례를 확보한 연구가 필요하다.

Keywords: 신우신염, 경피적 신장 창냄술, 요배양 검사
시술 결과
전체 환자의 기본 의학적 정보는 Table 1에 같았다. U-score 6점 미만인 환자는 51명(49%), 6점 이상인 환자는 53명(51%)이었다. 수술 후 요도협착의 재발은 15명(16.7%)에서 발생하였다. 전요도, 음경요도, 후부요도, 및 구부요도 순으로 재발이 잘 발생하였으나 통계적 유의성은 없었다.(Figure 1, p=0.246). 1년 및 3년 협착의 무재발률은 각각 82.9% 및 77.6%였다. 후부요도의 경우 이전 시술 병력이 있는 경우 더 재발을 잘하였다(p=0.02).

합병증은 15명(13.9%)에서 발생하였으며, 노우출 6명(5.8%), 혈종 4명(3.8%), 요도피부누공 2명(1.9%), 감염, 농양, 음낭한파증, 근소음영 피부괴사, 구강점막 절제부위 출혈, 음낭누공이 각각 1명(0.9%) 발생하였고, 이 중에서 grade III 이상의 합병증 발생율은 2.9%였다.

결론: 요도협착을 시행한 환자에서 높은 성공률 및 낮고 경미한 합병증 발생을 보이며, 요도협착에 대한 치료로서 우선적으로 고려해 볼 수 있는 수술이라 할 수 있다.

Keywords: 요도협착, 요도협착술
Safety and feasibility of the vaginal specimen extraction after laparoscopic surgery in patients with non-function kidney

정현철, 염송원, 김성용, 양대열, 고경태
한림의대 강동성심병원 비뇨의학과

Gynecologists have a long experience about the VSE (vaginal specimen extraction) not open surgery but also laparoscopic surgery. But, Urologists are not familiar with this vaginal extraction. We introduce our initial experience about the vaginal extraction after the laparoscopic nephroureterectomy in non-function kidney patients.

Two patients underwent a vaginal extraction. One patient (F/56) had a complete duplicated ureter with intravaginal ectopic ureteral orifice of upper collecting system.

The other patient (F/54) had a non-functional kidney due to chronic vesicoureteral reflux.

The patients were placed in the semi-lateral lower lithotomy position. Whole operative procedure was performed without any positional changes. Heminephroureterectomy and nephroureterectomy were performed using the standard techniques. After Urologic surgery, patients were trendelenburg position. A Gynecologist positioned between patient’s legs and created a transverse posterior colpotomy at the posterior fornix. Urologist positioned at patient’s left side and assisted that created a colpotomy via laparoscopic instruments ports. Finally, after VSE, colpotomy wound was transvaginally repaired by the Gynecologist.

The operative time for the VSE procedure of each patient was 45 min and 40 min. The estimated blood loss was very scanty. Intra/peri-operative complications did not occur within hospital period. Post-operative 1 day, the patients were permitted to eat a soft diet and were encouraged to walk ambulation. One patient experienced the peritoneal fluid leakage through the vagina. But, this symptom was disappeared within two days.

The vaginal specimen extraction after laparoscopic urologic surgery is Safe and feasible procedure.

Keywords: 질경유검체추출, 무기능신장, 신장절제술
Assessment of the quality of randomized controlled trials publishes about premature ejaculation

조정기, 김규식, 정세훈, 최홍용, 이승욱
한양의대 비뇨의학과

Quality assessment of randomized clinical trial (RCT) is important to prevent the adoption of findings of low-quality trials into clinical practice. Premature ejaculation (PE) is one of major sexual problem which related with quality of life. A quality assessment was conducted on all studies identified as RCTs published about premature ejaculation from 1987 to 2016. We extract RCTs in original articles from including Pubmed, Embase. The review period was divided into three terms: early, mid, and late. The Jadad scale, van Tulder scale, and the Cochrane Collaboration Risk of Bias Tool (CCRBCT) were employed. The RCTs were also categorized by country of origin, funding, and etc. A total of 782 original articles and 93 RCTs were published about PE for the review period. The ratio of the number of RCTs about PE and original articles over time was not increased (p=0.124). Significant differences in Jadad score and CCRBT were not found over time, but there was significant changes in the van Tulder scale scores (p=0.01). Moreover, significant differences in quality analysis were found according to IRB approval (p=0.038, respectively). RCT quality not improved through third decade except van Tulder scale, therefore it would be required for the researchers to focus efforts in performing high quality studies to ensure appropriate study performance.

Keywords: Quality, Randomized controlled trial, Assessment, Jadad
Quality analysis of randomized controlled trials published about erectile dysfunction (2007–2016)

김규식, 정재훈, 최홍용, 김용태, 문홍상, 이승욱
한양의대 비뇨의학과

**Introduction:** The aim of this study was to assess the quality of RCTs published about Erectile Dysfunction in 2007–2016.

**Methods:** We searched randomized controlled trials (RCTs) about erectile dysfunction (ED) using Pubmed which is original articles published in 2007–2016. Quality assessment of RCT over time was assessed with Jadad and van Tulder scales and Cochrane Collaboration’s risk of bias tool (CCRBT).

**Results:** Of the RCTs, 67.7% and 9.0% described blinding and allocation concealment, respectively. Both tended to decrease, but a sharp dip was observed in 2011–2012 in blinding. Funding statement inclusion (59.6% overall) and intervention description (96.4% overall) tended to increase steadily. IRB statement inclusion (76.7% overall) increased significantly (p=0.08). Jadad scores rose significantly until 2011–2012. However, decrease since then (p=0.04). Van Tulder scores tended to increase until 2011–2012, decreased from 2013 (p=0.09). RCTs with funding statements had higher Jadad and van Tulder scores than unfunded RCTs (p<0.01 and 0.05, respectively). Also, IRB approval, Allocation, Intervention, and Multicenter done had associate with better quality.

**Conclusions:** RCT quality did not improved over time, but a dip in quality was observed in 2011–2012 because of increased blinding, IRB approval and allocation concealment.

**Keywords:** CONSORT statement, Randomized controlled trial, Reporting quality, Erectile dysfunction
전공의 연수교육
전공의 연수강좌 (1)
제1회의장(101+102)
2018년 4월 14일(토)

좌장 : 서호경(국립암센터)

09:10-09:25  MR-US Fusion Prostate Biopsy  이상철(서울의대)
09:25-09:40  신경인성방광 환자를 두려워 하지 말자  김명기(전북의대)
09:40-09:55  변화된 보험 급여 기준에 따른 비뇨기암 항암치료의 실제 적용  함원식(연세의대)
09:55-10:05  질의 및 응답
MR-US Fusion Prostate Biopsy

이상철

서울의대

Prostate Imaging-Reporting and Data System (PI-RADS) V2

<table>
<thead>
<tr>
<th>PI-RADS category</th>
<th>The likelihood of significant cancer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very low</td>
<td>clinically significant cancer is highly unlikely to be present</td>
</tr>
<tr>
<td>2</td>
<td>Low</td>
<td>clinically significant cancer is unlikely to be present</td>
</tr>
<tr>
<td>3</td>
<td>Intermediate</td>
<td>the presence of clinically significant cancer is equivocal</td>
</tr>
<tr>
<td>4</td>
<td>High</td>
<td>clinically significant cancer is likely to be present</td>
</tr>
<tr>
<td>5</td>
<td>Very high</td>
<td>clinically significant cancer is highly likely to be present</td>
</tr>
</tbody>
</table>

PI-RADS Assessment Category for the peripheral zone

<table>
<thead>
<tr>
<th>DWI</th>
<th>T2W</th>
<th>DCE</th>
<th>PI-RADS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Any*</td>
<td>Any</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Any</td>
<td>Any</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Any</td>
<td>Any</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Any</td>
<td>Any</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Any</td>
<td>Any</td>
<td>5</td>
</tr>
</tbody>
</table>

* "Any" indicates 1-5
Using MP MRI to triage men might allow 27% of patients avoid a primary biopsy and diagnosis of 5% fewer clinically insignificant cancers.

**MRI-guided Prostate Biopsy**

1. In-bore MRI-guided target biopsy
2. Device-mediated MRI-transrectal ultrasound fusion target biopsy
3. Cognitive MRI-US fusion target biopsy

**Direct MRI or US-Fusion?**

<table>
<thead>
<tr>
<th>MRI In-bore Targeting</th>
<th>MRI-US Fusion/Targeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can target all location</td>
<td>Apex, base hard</td>
</tr>
<tr>
<td>Just targets only</td>
<td>Targets + systematic</td>
</tr>
<tr>
<td>45min-1hr/target</td>
<td>&lt;15 min 12 core + target</td>
</tr>
<tr>
<td>Sedation</td>
<td>Local anesthesia</td>
</tr>
<tr>
<td>Performed at MRI suite</td>
<td>Performed at US room</td>
</tr>
<tr>
<td>Detection MRI + Procedure MRI</td>
<td>Only Detection MRI</td>
</tr>
</tbody>
</table>

**Direct In Bore MR-guided biopsy**

- Polkomy MR Eur Urol 2014: TRUSGB vs MRGB
- TRUSGB detected 128 cases of PCa in 223 men (57.6%) including 47 (37.3%) classed as low risk
- MRGB detected 99 cases of PCa in 142 men (56.7%) with equivocal or suspicious mpMRI, of which 6 (6.1%) were low risk.
- The MRGB pathway reduced the need for biopsy by 51%, decreased the diagnosis of low-risk PCa by 39.4%, and increased the detection of intermediate/high-risk PCa by 17.7%.
**MR-US fusion prostate biopsy**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Mechanical Articulated Arm</th>
<th>Electromagnetic Tracking</th>
<th>Software Image Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real time target tracking</td>
<td>Real time target tracking</td>
<td></td>
<td>Only software registration</td>
</tr>
<tr>
<td>Patient motion requires</td>
<td>Patient motion requires</td>
<td>Automatically compensates for motion</td>
<td></td>
</tr>
<tr>
<td>Arm partially restricts</td>
<td>Susceptible to EM interference</td>
<td>Step angle limit registration</td>
<td></td>
</tr>
<tr>
<td>Setup requires attaching</td>
<td>Setup requires EM registration</td>
<td>Only software registration</td>
<td></td>
</tr>
</tbody>
</table>

**Artemis system: Mechanical Articulated Arm**

- When the TRUS probe is rotated, encoders in the tracking mechanism transmit orientation and position of the transducer tip to software that displays and records location on the monitor.
- The tracking arm is stabilized and held stationary during the rotation, preventing change in pitch, yaw and depth of penetration.

**Volume Navigation System: Electromagnetic Tracking**

![Diagram of electromagnetic tracking system]

- **Sensor**
- **Transmitter**
- **Fully integrated Position sensor unit**

**Sensor and Patient Position**

**Performance characteristics of MR-US fusion in the detection of prostate cancer for selected studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Total (n)</th>
<th>Prostate biopsies</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>Positive or negative HGP (%)</th>
<th>HGP or LHP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miyakawa</td>
<td>44</td>
<td>51-55</td>
<td>37</td>
<td>84 (24/29)</td>
<td>76 (16/21)</td>
<td>10 (1/10)</td>
<td>9 (9/10)</td>
</tr>
<tr>
<td>Suzuki</td>
<td>132</td>
<td>132</td>
<td>85</td>
<td>86 (23/27)</td>
<td>78 (15/19)</td>
<td>14 (2/12)</td>
<td>11 (4/10)</td>
</tr>
<tr>
<td>Sugino-Bonelli</td>
<td>103</td>
<td>103</td>
<td>99 (13/13)</td>
<td>99 (12/12)</td>
<td>100 (10/10)</td>
<td>100 (10/10)</td>
<td>99 (12/12)</td>
</tr>
<tr>
<td>Cullum</td>
<td>900</td>
<td>900</td>
<td>89 (80/90)</td>
<td>89 (75/85)</td>
<td>90 (10/10)</td>
<td>90 (10/10)</td>
<td>89 (75/85)</td>
</tr>
</tbody>
</table>

**Recent studies about targeted biopsy**

- **High sensitivity & NPV for clinically significant Prostate cancer**

![Diagram of recent studies on targeted biopsy]

- **Table of study results**

*Clinical significance defined as:
1. Volume ≤ 4 mL or Gleason 2-3 or 4-5 with more than one core positive or 1 core with >4+4.
2. Volume > 4 mL but Gleason 2-3 or 4-5 with >4+4 or Gleason 3+4 or >5 with >3+4 or >5+3.

**P Meier et al. 2015**
MR-US fusion prostate biopsy (SNUBH)

- forest plots of pooled sensitivity of COG-TB, FUS-TB, MRI-TB for clinically significant PCa

MR-GB = FUS-TB = COG-TB

RI FFZ cancer
- PSA 8.657 ng/mL, Likert Score: 5
  - Systemic biopsy: GS 3+4 (1 out of 12)
  - Added biopsy: GS 3+4 (1 out of 2)
  - RALP: 3+4 at right FFZ

AFM cancer
- PSA 4.977 ng/mL, Likert Score: 5
  - Systemic biopsy: negative (0 out of 12)
  - Added biopsy: GS 3+4 (2 out of 2)
  - RALP: GS 3+4 at AFM

SNUBH Study
2015. 09. 01~2017. 02. 10

Unpublished data
Image Fusion

- MR-US fusion biopsy by Logiq E9 (GE, USA)
- Side by side display of TRUS and mpMRI image
- Real time registration after initial calibration

Prostate Magnetic Resonance Imaging and Magnetic Resonance Imaging Targeted Biopsy in Patients with a Prior Negative Biopsy: A Consensus Statement by AUA and SAR

- If repeat biopsy is recommended, prostate MRI imaging & subsequent MRI imaging targeted cores appear to facilitate the detection of clinically significant disease over standardized repeat biopsy.

Paradigm Shift

Past & Present:
US cannot detect all prostate cancer, therefore systematic randomized biopsy is essential.

Future:
Image based targeted biopsy may be essential.
신경인성방광 환자를 두려워 하지 말자
김 명 기
전북의대

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   ② 신체검사
   ③ 바노템지 및 전노령측정
   ④ 요검사 및 혈액검사
   ⑤ 성상검사
   ⑥ 요도방사선사진검사
   ⑦ 요생물학적검사
3. 치료
4. 수술

### 신경인성방광의 주요원인들

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<tr>
<th>부위</th>
<th>원인 설명</th>
</tr>
</thead>
<tbody>
<tr>
<td>진후신경계 손상에 의한 신경인성방광</td>
<td>손상된 신경의 형성, 외상성 손상, 역행성 챔버, 역행성 염증 등</td>
</tr>
<tr>
<td>직관신경계 손상에 의한 신경인성방광</td>
<td>글반뇌내수수를 포함한 글반뇌내수수 폐쇄</td>
</tr>
<tr>
<td>진후신경계 손상에 의한 신경인성방광</td>
<td>뇌출혈, 저혈압, 당뇨병성정후층 등</td>
</tr>
<tr>
<td>진후신경계 손상에 의한 신경인성방광</td>
<td>당뇨, 프로판알데하이드, 알코올병 등</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>손상</th>
<th>심장적 치료</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 척수손상</td>
<td>치료</td>
</tr>
<tr>
<td>2) 뇌손상</td>
<td>치료</td>
</tr>
<tr>
<td>3) 신경인성방광</td>
<td>치료</td>
</tr>
</tbody>
</table>

---

1. 손상-1) 척수손상

- 척수손상에 의한 뇌부종간호는 손상의 부위, 정도(마찰 또는 브렌크)와 가려에 따라 결정.

- 문헌
1. 뇌뇌 손상의 증후군회의의 손상
2. 뇌뇌에서 척수변두근기 상부부의 척수손상
3. 척수손상, 척수방사성염증 및 척수방사성염증의 원인

- 척수의 위치: T24-31
1. 손상-1) 혜수손상

- 최소뇌뇌화 후 생명의 혜수손상
  - 대뇌와 지간의 전수뇌서한 억제기능 상실
  - DO, DSD
  - Compliance 감소, 혈액호흡예별 및 혈색증 유발, 요로경험 등반
  - 신손상 가능능 높음

- 전수뇌중후 손상
  - 뇌뇌근변법, 요피, 일시성요실금
  - 신부요류 기능 약화 가능
  - 저항기 환생 뇌경화 유사, 저항기법(DLPP)
  - 저지막, 합병증, CIC, 전기자극치료 등

1. 손상-1) 혜수손상

- 자율신경신경부전 autonomic dysreflexis
  - 혜수손상 환자에서 측정하고 지명한 유급상품 유발 가능
  - T6-8 신부 손상, 혜부타수차 장상적인 환자에서 주로 발생
  - 경부 60%, 두부 20% 감도
  - 애매한 자극(주로 척추나 직경의 평행)에 의해 급성으로 지명상 적인 자율신경제발도, 특히 교감신경계 과정 반응 풍부
  - 교감신경 자극: 혜관수축, 고혈압, 두통, 피부증, 발진, 설계

1. 손상-1) 혜수손상

- 자율신경신경부전 autonomic dysreflexis
  - 시술 30분 전 속효성 갈음 결합제인 nifedipine xomg 투여
  - 원격이 되는 사망을 예기
  - 시술 중 속효성 갈음 결합제인 nifedipine 5-20mg 투여
  - 이 외 phentolamine, phentothiazine, chlorpromazine 1-2mg을 혈관주사
  - 교감신경절제술, 전수신경절제술, 혜수절제술, 정신신경절제술

1. 손상-2) 외상성 뇌손상

- 초기에 뇌뇌근변법이 혼란, 이후 다양한 양상

- 뇌뇌생발의 뇌손상
  - 뇌뇌초정후의 장기성 약제tropic inhibition을 악화시켜 NDO
  - 뇌뇌의 가능능 정상적: no DSD
  - 뇌뇌근고혈동성: 뇌, 체질, 측정 요실금
  - 뇌뇌근 수축 시 요실금을 악화하기 위한 의식적인 외요요효과근의 수측: pseudo-dysynergia.
1. 손상-3) 말초신경 손상

- 발열의 신경자체
  - 근관신경 발열 수축
  - 각상신경 발열추 비만, 발열감수 수축
  - 축부신경: 외교신경막 채

- 말초신경의 손상
  - conus medullaris, cauda equina 손상과 염상양성이 유사.
  - DU(Detrusor Underactivity) or DA(Detrusor Acontractility)
  - 외교신경막마의 아비
  - 발열 감각결여
    - A. Posterior(V명험정제술) 후 20-60%, Radical hysterectomy 후 20-80%, Anterior resection 후 20-35%

- 대부분 환자들은 시간 경과에 따라 허리부로기억이상이 안정화 됨.
  - 손상 9개월 후 약 80%에서는 정상세로 가당.

2. 신경학적 질환-1) 치매

- 알츠하이머 병
  - 가정 현안 후행의 차체
  - 인지 기능 장애치료의 현상과 관련
    - 요양 요법, 화장실 운동 및 떨어 놓음
  - 치료 계획: 수술, 경사, 알바, 간호적 간호 상태 등을 고려

- 정리성 치매
  - 30-100%에서 요실금이 발생
  - 여러 증상을 둘러 요실금 발생, DO가 종해 원인
  - 촉진 요법, 자극 및 화학적 요법
  - 유리한 요법: GIC

2. 신경학적 질환-2) 정상알수두증

- 정상알수두증
  - DO: 점박이, 블랙, 요실금
  - Shunt rate(20-80%에서 고안)

- 발병 정화
  - 발병 전후 6-10년 내에 30-50%에서 나타남
  - 요로 입원
    - 신부전(2-3%)(10년 이상 전환임 경우)

2. 신경학적 질환-4) 당뇨병성 방광증

- 당뇨병 환자의 50%에서 배뇨기 증상이 나타남.
- 말초신경병증이 있는 환자의 70-80%는 신경학적 요소로 기능장애
  - 초기: DO, UI
  - 발병정화요법, PVR 증가
  - 재발성 요로정화

- 생활습관 교정
  - U/A, culture, PVR: 해양 식사
  - PVR: Double voiding, GIC

2. 신경학적 질환-5) 해마증후군

- cauda equina: 첫손 1-3 손수중에서 끝나며 하부의 허게를 많은 부위의 신경 기능(column)
- 발열, 점박이, 성기능 등에서 첫손 후 첫손 임계를 수반 가능.

6) 경련

- 37-71%: 두부요로 기능장애
  - 내부부손산성에 반전을 하여 요로신경기능이 나타남.
  - 재발기: DO, 혈뇨기: DU
  - Nociception: 가진 수면 중첩(34-54%), 반노(5-30%), 요실금: 남성의 26%, 여성의 18%
  - 항문 MPH, Bottox injection
  - Large PVR, CIC

2. 신경학적 질환-6) 죽들음

- 다양한 요부요기능장애
  - ND0: 정상요실금
  - Nociception
  - 비뇨감각, 요부

- 피부진장/간암/발증
  - 이로 인한 다크 부용 환자의 50% 정도
  - Large PVR, weak stream, incontinence
  - 일반적으로 외과적 감압술 등여의 호판 기능
김명기: 신경인성방광 환자를 두려워 하지 말자

진단 - ① 병력정취

[상세한 내용은 이미지로 제공되지 않았습니다.]

진단 - ② 신체검사

- 적신호 상황 부위나 희망 감각 같은 신체검사 소견은 요약활동검사 소견과 매우 다른 경우가 대부분이어서 모든 환자에서 개별적으로 요약활동검사를 필요할 수 있습니다.

진단 - ③ 배뇨장치 및 진로항 측정

- 자가반응, CIC 배뇨장치
- 적은 비용과 비침습적으로 많은 정보가 제공되므로 모든 환자들에서 시행.

검사 종류 | 상세한 내용
---|---
배뇨장치 | 진단 검사, CIC 배뇨장치, 적은 비용과 비침습적

진단 - ④ 요사회 및 혈액검사

<table>
<thead>
<tr>
<th>검사 종류</th>
<th>상세한 내용</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinalysis (첫번째사진, 두번째사진)</td>
<td>CIC 또는 상처골반과 함께 수행하는 routine 추가검사로 적절히 여부 (symptomatic infection)의 경계를 제시할 수 있는 방법이다.</td>
</tr>
<tr>
<td>Urine culture (첫번째사진, 두번째사진)</td>
<td>CIC 또는 상처골반과 함께 수행하는 routine 추가검사로 적절히 여부 (symptomatic infection)의 경계를 제시할 수 있는 방법이다.</td>
</tr>
<tr>
<td>Blood chemistry (첫번째사진, 두번째사진)</td>
<td>Creatinine</td>
</tr>
</tbody>
</table>
### 진단 - ⑤ 영상검사

- 성부요로의 하부요로가 직점히 관찰되는 검사로 구분
- 하부요로는 요도 방광내시경과 비디오 UDS로 보이지 않아 필요하게 영상 검사로 성부요로 평가할 이유가 있습니다.

<table>
<thead>
<tr>
<th>영상검사 종류</th>
<th>상세내용 내용</th>
</tr>
</thead>
<tbody>
<tr>
<td>비조영 CT***</td>
<td>수술 중 예방, 점막 응답 빌리반백후 예방, 육부하 유무 및 정도, 전립신바이백 점막, rectal impaction 여부</td>
</tr>
</tbody>
</table>
  * 대부분의 적수증상 및 적수질환에서의 상부요로 상태 및 악화를 보이지 않아요. 비조영 CT 또는 신경초음파 검진 없음 |
| 수술 중 예방, 점막 응답 빌리반백후 예방, 육부하 유무 및 정도, 전립신바이백 점막, rectal impaction 여부 |

### 진단 - ⑤ 영상검사

- 신경초음파**
  * 수술 중 예방, 방광비후 예방, 육부하 예방 |
  * 대부분의 적수증상 및 적수질환에서의 상부요로 상태 및 악화를 보이지 않아요. 비조영 CT 또는 신경초음파 검진 없음 |
  * 방광수합의 보조로 요질환입니다. 주로 조기단계의 적수증상은 보이지만, 주로 3계급이 전반적 양상으로 관찰되며, 특히 5계급이 보이는 상황이 많음.

<table>
<thead>
<tr>
<th>억제성요도초음영술*</th>
<th>요도 협착 여부 및 정도</th>
</tr>
</thead>
<tbody>
<tr>
<td>비뇨관초음파 검진*</td>
<td>요도 협착 여부 및 정도</td>
</tr>
</tbody>
</table>

### 진단 - ⑥ 요도방광내시경검사

- 수술 전후 임상적으로 수정이나 산출이 필요할 상태의 환자들.

<table>
<thead>
<tr>
<th>요도방광내시경검사</th>
<th>상세내용 내용</th>
</tr>
</thead>
</table>
| 방광내시경검사      | 맥락적 유두, 점막으로 보이지 (페굴로 돌출형), 방광경부 상피 (방광경부의 pailous), 방광경부 이상 유무 |}

### 진단 - ⑦ 요혈동통검사

- 신경생방광이 이상되는 환자들에서는 모두 시행 |
- Spinal shock이나 cerebral shock period에서의 요혈동통감별 점검 필요

<table>
<thead>
<tr>
<th>요혈동통검사 세부종목</th>
<th>상세내용 내용</th>
</tr>
</thead>
<tbody>
<tr>
<td>filling cystometry***</td>
<td>방광충장착감, 방광유도, 방광유도, 절단경화학제 소수으로, 점막 표면의 마호감을 반사적으로 반사하지 못함</td>
</tr>
</tbody>
</table>
  * 급사 당시 또는 주요신경병변이있는 경우에 대비 (혈관내시경 및 조절(관찰관절용, 막막혈관 및 피로혈관) |
| Pressure-flow study*** | DSD 여부, guarding reflex 예측 |

### 진단 - ⑧ 요혈동통검사

- 신경생방광이 이상되는 환자들에서는 모두 시행

<table>
<thead>
<tr>
<th>검사 종류</th>
<th>상세내용 내용</th>
</tr>
</thead>
<tbody>
<tr>
<td>타라 혈압</td>
<td>신경학, 신경생방광, 신경생방광후 신경학적 병변의 복합, 신경학적 이상이 있는 경우에 특정요소를 받을 필요가 없음</td>
</tr>
<tr>
<td>Electrophysiologic study (특히 균치근검사)</td>
<td>BC, 둔 등</td>
</tr>
</tbody>
</table>
치료

- 환자의 변력, 신경검사, 신부뇨로 상태와 요약등검사의 결과로 판단
- 가장 우선 순위의 치료목적은 신기능 손상 방지.
- 신기능 손상 가능성에
  - 늑가. 향후 신부뇨로
  - 신부뇨로검사: 수선흡 부부
  - 요약본적검사: 고압변광(high pressure bladder)의 유무와 그 정도

약물치료
- 방광 내 부착을능응신 유사
- 수술

추적

- 신부뇨로의 상태에 따라 정점.
- 신경학적으로 안정가해 점이든 시점에서
  - low risk patient: upper tract monitoring
  - Intermediate risk group: UDS, upper tract monitoring
  - High risk group: frequent UDS, upper tract monitoring
변화된 보험 급여 기준에 따른 비뇨기암 항암치료의 실제 적용

함원식
연세의대

항암제 시작의 규모

- 현재 항암제 시작의 규모는 매년 증가하고 있으며 2020년까지 약 $120 billion의 매출을 예측 - 연평균 성장률이 약 7.1%
- 항암 요법의 종류로는 chemotherapy, targeted therapy, hormonal therapy 순으로 그리고 암 종류별로 blood, breast, gastrointestinal, prostate, lung, skin의 순으로 세계적 항암제 시작의 성장률 추도할 것으로 예측되고 있음.

항암약물요법

- 항암치료는 다양한 약제의 기초를 토대로, 관련 분야의 실험에서 희망을 중심으로 다 학제적 팀워크(multi-disciplinary teams)를 구축하여 전략하는 것을 추천
- 항암치료는 다음과 같은 요법이 적용이 정해져 있으며, 이는 개인적인 재판을 추천
  - 항암체계적 요법
  - 항암치료의 형태 및 효과
  - 항암체계적 요법
  - 항암치료의 형태 및 효과

투여기준

- 투여기간은 각 항암체계적요법에 따라 시기에 따라 경과시간(Stagel)로 병력을 근거하여 적용하는 경우가 있음
- 투여방법은: first-line, second-line, third-line으로 분류
- 투여방법은: 단독요법(단독요법), 변환요법(변환요법)
  - 단독요법: 단독요법, 변환요법
  - 변환요법: 변환요법, 변환요법

투여주기

- 주기AML 및 항암체계적요법은 2 3 cycle 더 반복할 때가능
- 항암체계적요법의 용량과 반응성에 따라 조절가능
- 항암체계적요법의 용량과 반응성에 따라 조절가능
- 항암체계적요법의 용량과 반응성에 따라 조절가능
- 항암체계적요법의 용량과 반응성에 따라 조절가능

【카드라인 : NCCN, ASCO, ESMO, ASIR, ASHMT, DESH, NCI, COG, BIDMC】
반응평가기준

<table>
<thead>
<tr>
<th>기준</th>
<th>RIDO change in sum of products</th>
<th>ECOG change in sum of largest diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS</td>
<td>0% decrease confirmed at 4 weeks</td>
<td>0% decrease confirmed at 4 weeks</td>
</tr>
<tr>
<td>SD</td>
<td>30% increase in CT, PB, or PD documented before PD confirmed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30% increase in CT, PB, or PD documented before PD confirmed</td>
<td></td>
</tr>
</tbody>
</table>

SD: 30% 미만으로 줄거나, 25% 미만으로 커지는 것

항암제의 분류

- 세포독성 항암제
  - 세포 내에 일반적으로 존재하는 DNA의 구조 형성이 영향
    을 주거나 미세소관을 표적하고 대사를 억제하기 때문에
    암세포를 공격하여 효과적인 치료 가능
  - But. 정상 세포 역시 암세포에서 수행되는 기전을 동일하
    게 기인 부분이 있기 때문에 부작용을 나타내는 문제점
- 표적 치료 항암제
  - 암의 성장에 관여하는 특별한 수용체나 단백질 표면을
    억제 해 빠르고 정확하게 바꾸는 것을 목표로 설정할 수 있으며, 선택적
    항암제로 공격하는 기전로써 비교적 정상 세포의 손상
    조절이 보다 적절하여 부작용을 경감

표적 치료 항암제

1) 항암 면역 치료제
   - interferon, interleukin
2) 단클론 항체 계열
3) Tyrosin-kinase inhibitor 계열
전공의 연수강좌 (2)

제1회의장 (101+102)
2018년 4월 14일 (토)

좌장 : 이상돈 (대한비뇨기과학회 수련이사/부산의대)

<table>
<thead>
<tr>
<th>시간</th>
<th>템스</th>
<th>강사</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:05-10:20</td>
<td>Management of Rising PSA after a Negative Prostate Biopsy</td>
<td>전향균 (성균관의대)</td>
</tr>
<tr>
<td>10:20-10:35</td>
<td>응급실에 내원한 Priapism 환자의 치료</td>
<td>김두상 (순천향의대)</td>
</tr>
<tr>
<td>10:35-10:50</td>
<td>음경보형물 삽입술에 대한 실제적인 접근 (수술방법)</td>
<td>이석영 (국민건강보험공단 일산병원)</td>
</tr>
<tr>
<td>10:50-11:00</td>
<td>질의 및 응답</td>
<td></td>
</tr>
</tbody>
</table>
Management of Rising PSA after a Negative Prostate Biopsy

전 황 균
성균관의대

What is the Significance of a “Negative Prostate Biopsy”?

- Negative Bx with persistently rising PSA
- Do not mean the absence of cancer
- Unrecognized prostate cancer
- Anxiety toward possible prostate cancer and a later diagnosis involves both the clinician and the patient

Negative → truly negative??

Assessing initial Bx

- Assessing the adequacy of the initial Bx
- Imply various clinical scenario
- Presence of absence of HGPIN or ASAP
- Number of sessions
- Number and location of cores obtained

PSA and its indices

- PSA, DRE, TRUS
- PSAD
- PSA velocity
- Prostate volume

How to manage?

Rising PSA
- Assess initial Bx
- Age
- PSA and its indices
- Prostate volume
- HGPIN
- ASAP/atypia

Close F/U
- Medication
- MRI

Repeat Bx
- Location
- Number
- MRI-guided
- Shared decision making
**Prostate volume**

*Impact of Prostate Size on Detection Rates at Repeat Biopsy*

![](image1)

Presti, Urol Oncol, 2009

---

**How many repeat biopsies?**

- Cancer detection rate: 20.30%
  - 2nd Bx cancer detection rate: 13%
- SMC data
  - Nov 1994 ~ Jul 2011
  - 8,371 TRUS-Bx
  - 1st Bx cancer detection rate: 23.4% (1,956/8,371)
  - 2nd Bx rate: 12.0% (142/1,180)

Park B, Asian Journal of Andrology, 2012

---

**HGPIN or ASAP**

- Subsequent Bx: 16% - 44.6%, cancer
- Rebiopsy every 3 years
  - multifocal
- Cancer detection rate
  - HGPIN vs benign (35.6% vs 25.0%)
- Unifocal or multifocal HGPIN

<table>
<thead>
<tr>
<th></th>
<th>1 yr</th>
<th>3 yr</th>
<th>5 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benign</td>
<td>3.6%</td>
<td>12.5%</td>
<td>22.4%</td>
</tr>
<tr>
<td>Unifocal</td>
<td>4.4%</td>
<td>14.7%</td>
<td>28.1%</td>
</tr>
<tr>
<td><strong>multifocal</strong></td>
<td>9.1%</td>
<td>29.0%</td>
<td>47.8%</td>
</tr>
</tbody>
</table>

Lichtowitz, Urology, 2001

---

**TRUS-Bx data, SMC (1994-2013)**

<table>
<thead>
<tr>
<th></th>
<th>1st Bx</th>
<th>2nd Bx</th>
<th>3rd Bx</th>
<th>4th Bx</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of patients</td>
<td>7477</td>
<td>983</td>
<td>190</td>
<td>36</td>
<td>8686</td>
</tr>
<tr>
<td>No cancer</td>
<td>4786</td>
<td>790</td>
<td>138</td>
<td>31</td>
<td>5745</td>
</tr>
<tr>
<td>Cancer</td>
<td>2691 (35.9)</td>
<td>193 (19.6)</td>
<td>52 (27.3)</td>
<td>5 (13.8)</td>
<td>2941 (33.8)</td>
</tr>
</tbody>
</table>

*Kim T et al, Korean J Urol, 2015*
전황균: Management of Rising PSA after a Negative Prostate Biopsy

2nd TRUS-Bx, SMC

<table>
<thead>
<tr>
<th>1st TRUS-Bx</th>
<th>N</th>
<th>Age</th>
<th>1st PSA</th>
<th>1st - 2nd Bx duration</th>
<th>PSA velocity</th>
<th>Cancer detection rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>no cancer</td>
<td>1,027 (94.9)</td>
<td>61.6</td>
<td>7.2</td>
<td>31.0 mos</td>
<td>0.88/yr</td>
<td>14.4% (148/1,027)</td>
</tr>
<tr>
<td>HGPIN 1</td>
<td>82 (6.8)</td>
<td>63.3</td>
<td>5.6</td>
<td>7.6 mos</td>
<td>-1.98/yr</td>
<td>14.6% (12/82)</td>
</tr>
<tr>
<td>HGPIN x 2</td>
<td>54 (4.5)</td>
<td>67.6</td>
<td>6.0</td>
<td>7.6 mos</td>
<td>1.36/yr</td>
<td>29.5% (16/54)</td>
</tr>
<tr>
<td>Atypical gland or ASAP</td>
<td>46 (3.8)</td>
<td>62.7</td>
<td>7.2</td>
<td>27.6 mos</td>
<td>1.47/yr</td>
<td>37.0% (17/46)</td>
</tr>
<tr>
<td></td>
<td>1,209</td>
<td>62.0</td>
<td>7.1</td>
<td>28.2 mos</td>
<td>0.79/yr</td>
<td>16.0%</td>
</tr>
</tbody>
</table>


1st TRUS-Bx: no cancer (n=1,027), SMC

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>No cancer</th>
<th>cancer</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd TRUS-Bx</td>
<td>1,027</td>
<td>879 (85.6%)</td>
<td>148 (14.4%)</td>
<td>-</td>
</tr>
<tr>
<td>Age</td>
<td>61.6</td>
<td>61.3</td>
<td>63.4</td>
<td>0.003</td>
</tr>
<tr>
<td>1st PSA</td>
<td>7.26</td>
<td>7.05</td>
<td>8.49</td>
<td>0.947</td>
</tr>
<tr>
<td>2nd PSA</td>
<td>8.64</td>
<td>8.18</td>
<td>11.3</td>
<td>0.008</td>
</tr>
<tr>
<td>1st - 2nd Bx duration</td>
<td>31.0 mos</td>
<td>31.1 mos</td>
<td>30.4 mos</td>
<td>0.748</td>
</tr>
<tr>
<td>PSA velocity, ng/ml/yr</td>
<td>0.88</td>
<td>0.76</td>
<td>1.55</td>
<td>0.385</td>
</tr>
</tbody>
</table>


Age

<table>
<thead>
<tr>
<th>AGE, yr</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>18</td>
<td>9%</td>
</tr>
<tr>
<td>40-54</td>
<td>165</td>
<td>12.7%</td>
</tr>
<tr>
<td>55-69</td>
<td>692</td>
<td>13.7%</td>
</tr>
<tr>
<td>&gt;70</td>
<td>152</td>
<td>21.1%</td>
</tr>
</tbody>
</table>


2nd PSA

<table>
<thead>
<tr>
<th>PSA, ng/ml</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4</td>
<td>119</td>
<td>9.2%</td>
</tr>
<tr>
<td>4-7</td>
<td>443</td>
<td>13.3%</td>
</tr>
<tr>
<td>7-10</td>
<td>259</td>
<td>12.7%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>206</td>
<td>21.8%</td>
</tr>
</tbody>
</table>


PSA Velocity (1st - 2nd Bx)

<table>
<thead>
<tr>
<th>PSA velocity, ng/ml/yr</th>
<th>Total</th>
<th>1st - 2nd Bx duration</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0</td>
<td>230</td>
<td>36.5 mos</td>
<td>10.9%</td>
</tr>
<tr>
<td>0 - 1</td>
<td>386</td>
<td>39.1 mos</td>
<td>11.8%</td>
</tr>
<tr>
<td>1 - 2</td>
<td>173</td>
<td>24.5 mos</td>
<td>19.7%</td>
</tr>
<tr>
<td>2 - 3</td>
<td>62</td>
<td>22.4 mos</td>
<td>19.4%</td>
</tr>
<tr>
<td>3 - 4</td>
<td>41</td>
<td>14.9 mos</td>
<td>22.0%</td>
</tr>
<tr>
<td>&gt; 4</td>
<td>97</td>
<td>12.0 mos</td>
<td>21.6%</td>
</tr>
</tbody>
</table>


How to manage?

Rising PSA

- Close F/U
- Repeat Bx
- Medication
- MRI
- Location
- Number
- MRI-guided
- Shared decision making

Medical Management

- **Antibiotics**
  - Fail to decrease the need for biopsy
  - Men who whose PSA levels decrease may receive false reassurance of benign
  - Bacterial resistance
  → The practice is largely discouraged and limited to the setting of infection
- **5-α reductase inhibitor**

Medical Management

**Platinum Priority – Review – Prostate Cancer**
Editors by Jack E. Freihofer Jr., Fabio J. Schröder and Armin F. Schröder on pp. 191–193 and
by Stephen J. Frensch and Gerald L. Andrei on pp. 194–196 of this issue

**Prostate Cancer Detection and Outcomes:**
Utility and Limitations of Prostate-Specific Antigen in Men with Previous Negative Biopsies


Leeuwen P.J. European Urology, 2011

**Imaging to Detect Undiagnosed Prostate Cancer**

- **TRUS**
  - Limited sensitivity and specificity
  - Low detection rates after secondary or tertiary biopsies
- **MRI**
  - Lesion-by-lesion detection rate depending on the size and localization of the tumor
  - Multiparametric MRI
  - Patient is highly motivated to avoid repeat biopsy

Leeuwen P.J. European Urology, 2011

**MRI role**

Lesion Localization in Patients With a Previous Negative Transrectal Ultrasound Biopsy and Persistently Elevated Prostate Specific Antigen Level Using Diffusion-Weighted Imaging at Three Tesla Before Rebiopsy

Park B.K., Investigative Radiology Ann, 2008

**Localization Unrecognized Prostate cancer**

- **Peripheral zone**
- **Transitional zone**
- Laterally detected peripheral zone
  - Provide a higher potential yield
- **Anterior apex**
Anterior apex

- Anterior prostate cancer harbors a significantly greater incidence of prostate cancer than perceived, because biopsies more reliably target the posterior prostate (Bouye, Prostate, 2009)

- Tumor frequency-RP specimens (Takahisa, Urology, 2002)
  - Mid-gland (85.5%), apex (82.3%)

- Do not include ant. apex- 17% loss (Thight, Urol Oncol, 2008)

Imaging to Detect Undiagnosed Prostate Cancer

- MRI
  - MRI + TRUS-guided Bx
  - MRI + MRI-guided Bx

MRI+TRUS-Bx

- 43 patients (40-80, mean 62.6 yrs)
- Previously TRUS-Bx: negative
- Persistent elevated PSA

- Cancer detection: 17 (39.5%) patients
- Transitional zone (76.4%, 13/17)
- Peripheral zone (23.6%, 4/17)

Park BK, Investigative Radiology Ann, 2008
**Summary: 2017 EAU guideline**

Table 5 - Indications for rebiopsy after a negative biopsy and the associated risk to find a prostate cancer

<table>
<thead>
<tr>
<th>Indication</th>
<th>Associated PCa risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising and/or previously elevated PSA</td>
<td>~5-30%</td>
</tr>
<tr>
<td>Suspicious DRE</td>
<td>~40%</td>
</tr>
<tr>
<td>Acytical small acinar proliferation (i.e. atypical glands: suspicious for cancer)</td>
<td>~30%</td>
</tr>
<tr>
<td>Extensive (i.e. ≥3 biopsy sites) high-grade PIN</td>
<td>~30%</td>
</tr>
<tr>
<td>Few atypical glands immediately adjacent to high-grade PIN</td>
<td>50%</td>
</tr>
<tr>
<td>Intraductal carcinoma as a solitary finding</td>
<td>&gt;90% (mainly high-grade PCa)</td>
</tr>
<tr>
<td>Positive mpMRI</td>
<td>34-68%</td>
</tr>
</tbody>
</table>

DRE = digital rectal examination; mpMRI = multiparametric magnetic resonance imaging; PCa = prostate cancer; PIN = prostatic intraepithelial neoplasia; PSA = prostate-specific antigen.

**How to manage?**

- **Rising PSA**
  - Assess initial Bx
  - Prostate volume
  - PSA and its indices
  - HGPIN
  - ASAP/atypia

- Close F/U
- Repeat Bx
  - Location
  - Number
  - MRI-guided
  - Shared decision making

**경청해 주셔서 감사합니다.**
Introduction

Priapism is a full or partial erection that continues more than 4 hours beyond sexual stimulation and orgasm or is unrelated to sexual stimulation. (Campbell-Walsh Urology, 11th Edition)

Ischemic Priapism

- A persistent erection marked by rigidity of the corpora cavernosa
- Decreased or absent cavernous blood flow
- Similar to compartment syndrome
- Increase in pressure within the enclosed cavernosal space and compression of circulation.
  - progressive hypoxia, hypercarbia, and acidosis
- 95% of all priapism episodes

Ischemic Priapism

- Time dependent erectile tissue damage
  - > 6 hours: Irreversible corporal damage
  - 12 hours: Interstitial edema, progressing to destruction of sinusoidal endothelium, exposure of the basement membrane
  - At 48 hours:
    - Thrombi in the sinusoidal spaces
    - Tissue necrosis and fibroblast proliferation

Campbell-Walsh Urology, 11th Edition
Recurrent ischemic Priapism

- Repeated, yet self-resolving, episodes of ischemic priapism
- Episodes typically lasting <3 hours and occurring during sleep
- A more complex molecular mechanism
- Decreased NO bioavailability as the basis for RIP associated with hematological disorders

Non-ischemic Priapism

- <5% of observed clinical cases
- A persistent erection caused by unregulated cavernous arterial inflow
- The corpora are tumescent but not rigid and the penis is not painful
- Disruptions of the cavernous arterial supply involving mechanisms of injury
- Arteriolar-sinusoidal fistula

Cause of Priapism - Ischemic priapism

- Idiopathic
- Neurologic disorders
- Spinal cord disease, Parkinson disease, multiple sclerosis, myelopathy, encephalitis, temporal lobe vascular injury
- Infections
- Bacterial, fungal, or viral infections
- Systemic disease
- Anaemia, hypotension, diabetes mellitus, hypertension, hypoglycaemia, hyperlipidaemia, uremia, metabolic acidosis, heart failure, direct vascular injury
- Medications
- Anticoagulants, phosphodiesterase inhibitors, nitric oxide donors, PDE5 inhibitors, nitrates, antihypertensives, beta-blockers, alpha-blockers, selective serotonin reuptake inhibitors
- Other
- Metabolic, neoplastic, psychogenic, traumatic, iatrogenic

Cause of Priapism - Nonischemic priapism

- Trauma
  - Straddle injury, coital injury, pelvic trauma, kick to penis or perineum, birth canal trauma to the newborn male
  - Intracavernosal injections or aspiration
- Metastatic malignancy to the penis
- Acute spinal cord injury
- Intracavernosal injections or aspiration
### Key findings in priapism

<table>
<thead>
<tr>
<th></th>
<th>Ischaemic priapism</th>
<th>Nonischaemic priapism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of spontaneous</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Penile pain</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Abnormal penile blood gas</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Haematological abnormalities</td>
<td>Usually</td>
<td>Seldom</td>
</tr>
<tr>
<td>Report intra-prostatic injection</td>
<td>Sometimes</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Perineal trauma</td>
<td>Seldom</td>
<td>Usually</td>
</tr>
</tbody>
</table>

*J Urol 2009;170:1216-24*

### Evaluation of Priapism

- **Physical Examination**
  - Inspection and palpation of the penis
  - The extent and degree of tumescence and rigidity
  - The involvement of the cavernous bodies
  - The presence of pain
  - The evidence of trauma to the perineum

### Evaluation of Priapism

- **Laboratory Testing**
  - Complete blood count (CBC)
  - WBC count with blood cell differential
  - Platelet count
  - Coagulation profile
  - Corporal blood gas

<table>
<thead>
<tr>
<th></th>
<th>PCO₂ (mm Hg)</th>
<th>PO₂ (mm Hg)</th>
<th>PH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal arterial blood (room air)</td>
<td>&gt;60</td>
<td>&lt;40</td>
<td>7.40</td>
</tr>
<tr>
<td>Normal mixed venous (room air)</td>
<td>40</td>
<td>60</td>
<td>7.36</td>
</tr>
<tr>
<td>Ischaemic priapism (first corporal artery)</td>
<td>&lt;20</td>
<td>&gt;60</td>
<td>&lt;7.25</td>
</tr>
</tbody>
</table>

### Evaluation of Priapism

- **Imaging study**
  - Penile color doppler ultrasonography
    - Prolonged ischemic priapism: No blood flow in the cavernous arteries
    - Nonischemic priapism: Normal to high blood flow velocities detectable in the cavernous arteries
  - Penile arteriography
  - When embolization is planned in nonischemic priapism
  - Magnetic resonance imaging (MRI)
    - Imaging of a well-established arteriovenous fistula
    - Demonstrate the presence and extent of tissue thrombus and corporal smooth muscle infarction in ischemic priapism
    - Imaging of corporal malignancy or metastasis

* A. Examination of the crural bodies is required when searching for arterial sinusaloid fistula after straddle injury. B. Color Doppler image of arterial sinusaloid fistula of left cavernous artery.
Medical Treatment: Ischemic priapism

- Oral sympathomimetic drugs
  - Ephedrine, pseudoephedrine, phenylpropanolamine, terbutaline
- Not recommended in the management of acute ischemic priapism (>4 hours)
- The recommended initial treatment of ischemic priapism
  - Decompression of the CC by aspiration
    - Immediately soften the erection and relieve pain
    - Relieve priapism in 36% of cases

Medical Treatment: Ischemic priapism

- Intracavernosal injection of sympathomimetic drugs and aspiration
- Sympathomimetic drugs
  - Phenylephrine, ephedrine, ephedrine, epinephrine, norepinephrine, metaraminol
  - Cavernous smooth muscle contraction
- Serial monitoring of blood pressure and pulse
  - Potential side effects of intracavernous sympathomimetics
  - Headache, dizziness, hypertension, reflex bradycardia, tachycardia, and irregular cardiac rhythm

Pharmacologic management of ischemic priapism

<table>
<thead>
<tr>
<th>Treatment (dose, drug, and dosage)</th>
<th>Mechanism of action</th>
<th>Side effect and precaution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenergic system effects (intracavernosal)</td>
<td>Phenomax intracavernosal/intracavernosal injection</td>
<td></td>
</tr>
<tr>
<td>Phenylephrine 100-200μg, 1 mL of 10% solution, every 2 minutes (maximize 200 μg or 10-20 mL of 25 μg/mL solution)</td>
<td>α-tubulization of erectile tissue</td>
<td></td>
</tr>
<tr>
<td>Ephedrine, 5-15mg pm</td>
<td>α-synephrine, dopamine</td>
<td></td>
</tr>
<tr>
<td>Epinephrine, 5-10 mg pm</td>
<td>α-phenylephrine, dopamine, arginine</td>
<td></td>
</tr>
<tr>
<td>Epinephrine 10-20 mg pm, 20 mL of 1 mg/mL solution every 2 minutes</td>
<td>α-phenylephrine, dopamine, arginine</td>
<td></td>
</tr>
<tr>
<td>Norepinephrine, 10-20 μg pm</td>
<td>α-piinephrine, dopamine, arginine</td>
<td></td>
</tr>
<tr>
<td>Metaraminol, 2-4 mg pm</td>
<td>α-piinephrine, dopamine, arginine</td>
<td></td>
</tr>
<tr>
<td>Guanylyl cyclase inhibitors (intracavernosal)</td>
<td>Inhibition of endothelial-mediated cavernosal relaxation</td>
<td></td>
</tr>
<tr>
<td>Methylxanthine, 50-100 mg pm</td>
<td>Phenylephrine</td>
<td></td>
</tr>
</tbody>
</table>

Medical Treatment: Ischemic priapism

- Phenylephrine
  - The agent of choice (AUA, EAU)
  - Selective α1-adrenergic receptor agonist
  - Minimal β-mediated isotropic / chronotropic cardiac effects
  - 200 μg/mL in saline, 0.5 mL to 1.0 mL every 5 to 10 minutes
  - Maximum dosage of 1 mg within 1 hour
Medical Treatment: Ischemic Priapism

Dilution of Phenylephrine

10 mg/1 ml → 200 µg/1 ml

30 mg/ml (10,000 µg) → 9 ml NS
10 mg/10 ml (10,000 µg) → 1 ml NS
1 mg/ml (1,000 µg) → 4 ml NS
200 µg/ml (x 5)

Surgical Shunts for Ischemic Priapism

- Indication
  - Repeated penile aspirations and injections of sympathomimetics have failed
  - A significant cardiovascular side effect of sympathomimetics
- The objective of shunt surgery
  - Reoxygenation of the cavernous smooth muscle
  - Reestablish corporal inflow by relieving venous outflow obstruction
  - Creation of a fistula between the CC and glans penis, CC and corpus spongiosum, or CC and dorsal or saphenous veins

Surgical Shunts for Ischemic Priapism

- Percutaneous Shunts
  - Winters (1978, J Trauma 18:227)
  - Ebbehoj (Scand J Plast Reconstr Surg 1974, 8:241)
- Open distal Shunts
  - Al-Sharif (J Urol 2013: 189:1028)
  - "Corporal Shave" (J Urol 2013: 189:1028)
  - Open proximal Shunts
- Venous Shunts
  - Wexler (J Urol 1978: 119:794)
  - Grayhack shunt

Corporal smale manometor
Immediate Implantation of Penile Prosthesis

- Consider penile prosthesis in the following circumstances
  - Aspiration and sympathetic ICI have failed
  - Distal and proximal shunting procedures have failed
  - Ischemia has been present for longer than 36 hours

Immediate Implantation of Penile Prosthesis

- The natural history of untreated or refractory ischemic priapism
  - Severe fibrosis, penile length loss, and complete ED
- Immediated or early penile implantation in the acute management of ischemic priapism
  - Corporal fibrosis is not yet established
  - Preservation of penile length
  - Technically easier implant insertion

Non-ischemic Priapism

- Not an emergency
- Spontaneous resolution or response to conservative therapy: up to 62%
- Onset of HFP is typically delayed for 72 hours after injury.
Non-ischemic Priapism

- Observation
  - Spontaneous resolution: up to 52%
- Conservative management
  - Applying ice to the perineum or site-specific perineal compression
  - Repeated aspirations, injection, and irrigation with intracavernous sympathomimetics – not recommended
- Selective arterial embolization
  - Success rate > 80%
  - Normal postembolization erectile function: 75 - 85%
  - Nonpermanent (autologous clot, absorbable gels) and permanent (coll, ethanol, polyvinyl alcohol particles, and acrylic glue)

Non-ischemic Priapism

- Surgical ligation of sinusoidal fistulas/pseudoaneurysms
  - Intraoperative Doppler ultrasound guidance
  - Transcorporal approach
- Indication
  - Do not wish to pursue expectant management
  - Poor candidates for angioembolization
  - Refuse the procedure angioembolization
  - Angioembolization has failed
- ED: up to 50% of cases

감사합니다.
음경보형물 삽입술에 대한 실제적인 접근 (수술방법)

이석영

국민건강보험공단 일산병원

AMS 700 CXR
PRECONNECT PROSTHESES with MS pump

- RESERVOIR: 65 ML (SPHERICAL RESERVOIR ONLY),
100 ML (SPHERICAL RESERVOIR
AND AMS CONCEAL LOW PROFILE RESERVOIR)
- CYLINDER DIAMETER: 9.5 MM -14.5 MM
- CYLINDER LENGTHS: 12CM, 14CM, 16CM, 18CM
- NON-STAXACKABLE REAR TIP EXTENDERS:
TWO EACH -6.5CM, 1.5CM, 1.5CM, 2.0CM, 2.5CM, 3.0CM

CAUTION: Using a device with InhaliZene Antimicrobial Surface Treatment does
not change the need to follow normal hospital protocols for prophylactic
antibiotic administration.

Once the patient is in the operating room, the clinician should shave the abdominal
and genital area. Following the shave, the area should be saturated with povidone-
iodine soap for ten minutes or the approved hospital prospective scrub procedure.
이석영: 음경보형물 삽입술에 대한 실제적인 접근(수술방법)
이석영: 음경보형물 삽입술에 대한 실제적인 접근(수술방법)
이석영: 음경보형물 삽입술에 대한 실제적인 접근(수술방법)
전공의 연수강좌 (3)

제1회의장(101+102)
2018년 4월 14일(토)

좌장 : 박용진(박 비뇨기과)

11:20-11:40 남성 외음부의 피부 질환 정도린(멘파워 비뇨기과)
11:40-12:00 여성 외성기의 피부 질환 김경희(미즈러브 여성비뇨기과)
12:00-12:10 질의 및 응답
남성 외음부의 피부 질환

정도린

멘파워 비뇨기과

남성 외음부의 피부질환

- 비뇨기과 질환
- 포피염
- 젖은 모발로마
- 음양양
- 성기포진
- 성병성 질환
- 흉통

- 피부과 질환
- 습진
- 건식
- 급성 피부
- 만성포진
- 둥드

본문 포영상

1. 전신포장
2. 가성포장
3. 갈로포장

포영상 수술 후 생기는 문제

- 바라모스
- 매파모스
- 피부모스
정도린: 남성 외음부의 피부 질환

판매의 연수 교육

콘딜로마

Pearly Penile Papules, Genital Warts
정도린: 남성 외음부의 피부 질환

전공의 연수 과목

침착피부염: 수포

조혈관형 웅크리짐(Angiokeratoma of Pontyce)

Zoon Balanitis
Balanitis phasmacellularis

관절 염증(ascending lymphangitis)

습진
다형홍반

원인
다형 홍반은 다양한 염증증에서 발생할 수 있지만 많은 경우 난성 또는 방광기에서 발생하며, 약물성 홍반의 원인 중 하나이다. 원인으로는 비뇨기계의 염증, 감염, 약물, 화학물질, 섭취, 자극, 물질, 감염 등이 있다. 가능한 원인중 일부는 다음과 같다.

- 비뇨기계의 염증, 감염
- 약물
- 화학물질
- 섭취
- 자극
- 물질
- 감염

증상
다형 홍반의 증상은 다양하다. 주로 발열, 피로, 두통, 설사, 구토, 혈변 등이 발생할 수 있다. 또한 일부 환자에서는 구강, 눈, 코, 귀, 척추, 근육 등에 다양한 증상을 보일 수 있다. 이는 홍반의 원인에 따라 다르게 나타날 수 있다.

진단
다형 홍반의 진단은 임상 증상과 검사로 이루어진다. 임상 증상은 홍반의 원인에 따라 다르게 나타날 수 있다. 검사로는 혈액 검사, 소변 검사, 소화기계의 검사, 피부 검사 등이 포함된다.

치료
다형 홍반의 치료는 원인에 따라 다르게 이루어진다. 원인에 따라 치료 방법이 결정되며, 치료는 항생제, 비타민, 천식, 요제, 항정신질제, 항염제 등의 치료로 이루어진다. 또한, כא나의 증상을 완화하기 위한 치료도 필요하다.
정도란: 남성 외음부의 피부 질환
여성 외성기의 피부 질환

김 경 희

미즈루브 여성비뇨기과

만성 단순 테선
(Lichen simplex chronicus)
직장략적인 절개 및 소질증에 의해 피부를 알리하게 증가한 후 피부등에 테선성 피부변화가 발생하는 질환

경화 위축성 대선
(Lichen sclerosus et atrophicus)
전체 위축성 대선은 피부별 절벽의 절벽 피부변화 질환으로, 악화의 경과가 원인의 악화 등의 끝나고 조성에 따라 질환을 두 가지로 본다.

건성
(Psoriasis)
알코올을 이용한 간결성 질환이 빠른 반응으로 합병증로 호전이 향상된 후 "가산성"을 나타내며, 악화로 가속화된 경우 "가산성"과 "가산성"으로 나누어진다.

외음지루각화증
(Seborrheic keratosis)
외음 피부 성장성 증후군으로, 빈도가 높은 경우 피부 과부화와 후반부화가 증상으로 나타나고, 발재료의 진동 기여나 불안감, 두통, 잠기 등의 증상이 발생한다.
전촉성 피부염
(Contract dermatitis)

차가울림이나 절대적 기온등으로 인한 여성의 피부염은 주로 소양증과 적절한 보호를 통해 예방할 수 있다. 특이형태의 촉촉한 피부를 보호하는 것이 중요하다. 햇빛이 너무 강한 경우에는 피부를 보호할 필요가 있다.

간찰진
(intertrigo)

간찰진은 두 피부가 접촉되어 열, 습도, 및 오염물질에 노출된 경우 발생한다. 특정적으로는 산부인과, 장내로, 위장강 등에 발생할 수 있다. 건강한 피부는 피하지 질환을 예방하기 위해 필요한 요소이다.

칸디다외음질염
(Candidal vulvoanogenitalis)

카나디아는 세균으로, 인간의 피부, 장기의 표면으로 부터 오염된 절대적으로 감염될 수 있다. 침모세포나 비염소체를 통해 피부에 감염될 수 있다. 카나디아는 감염된 부위의 피부를 약화시켜 피부가 손상된다.

완선
(Tinea Cruris)

완선은 T. rubrum의 가장 흔한 외부 감염 중 하나로, 사람의 피부와 장기에서 발생한다. 피부의 진단은 외래하고 있는 경우 경로학적 진단을 통해 가능하다. 완선은 견苦し거나 발병후 1개월 이상 후에 발생하므로, 긴장과 불편함을 유발한다.

음부포진
(Genital Herpes)

음부포진은 성교, 수분화, 세균, 진균, 바이러스 등에 의해 발생한다. 피부에 나타나는 증상은 통증, 발열, 발아, 발병 등으로 나타난다. 발병 시에는 진단을 위해 검사를 시행해야 한다.

콘딜로마
(Condyloma)

콘딜로마는 성적 활동으로 인해 발생할 수 있는 성지역 질환이다. 감염된 피부에 특별한 증상이 없다면 보이는 해부적 이상을 약하거나 치료하지 않아도 자가 치유된다. 전장이나 수복을 위해 치료를 받지 않는 경우가 많으나, 특히 성적 활동 중에 발생한 경우는 치료를 권장한다.
한관종 (Syringoma)
한관종은 눈입근에 발생하고 주로 흰색과 분홍색의 작은 점이 있다. 크기는 2-3mm 정도가
그 중 1/3에서 눈부주는 점이다.
한관종은 자궁내, 두개골의 피부에만 발생하지 않는 신체의
손상이나 피부질환의 부위에서 주로 관찰되는 질병으로
한관종은 피부의 진공진식을 일으키는 것으로 알려져 있다.

외음표피낭종 (Epidermal cyst)
가장 많은 양을 가진 악성 종양으로, 악성 화공형의 침범에 있다. 상처로
작용하기 때문에 성장이 정상보다 더 빠르게 producing되는 특징이 있다. 이
성장속도는 성장의 속도가 빠르거나 부
고인과 노인피로로 나타나는 양을

켈코이드 (keloid)
강의 후 발생하는 심각한 과장된 피부를 줄기에서 떨어진 피부가 의도적으
로 발생하는 질병으로, 특히 수술이나 부위의 인공 의료를 받던 경우에
적발할 수 있다. 이는 일반적으로 막대의 부위, 배부위, oror 지방으로

사면발이 (Pediculosis pubis)
사면발이는 대상의 체온에 따라 달라지며, 악성의 종양의 진통에 가해지는
대상이 수
책의 일반적 질병과의 외usal로 발생하지치 않는 질로 알려져 있다.

음 (Scabies)
음은 인간의 접촉에 의한 과속된 병원체의 감염으로, 호흡기로 인한 진공진식에

가타
발라닌 세포증후군
백반증

파신폴리피증

VIN
외부피광백추정
Overview of Treatment of Vulvovaginal Disease

Kim Chae, Myung An Jeon

Abstract

Vulvovaginal diseases are commonly inappropriately diagnosed and treated. Most are dermatologic but can be triggered in presentation in the urogenital area. There is limited training or education for medical caregivers for these conditions. The first step is correct diagnosis, which requires time and knowledge of the normal and abnormal anatomy, and careful examination. Dermatologists are invaluable for management as they recognize skin problems and can correct barrier function, control inflammation, and address itching and pain.

Key Words: examination, lichen planus, lichen sclerosis, pruritus, vaccinia, vulva

The consequences of vulvovaginal diseases being rare and buried is that they frequently missed or mismanaged by medical and surgical caregivers, leaving both patients and physicians floundering. Women hole up and scratch, endure pain, experience significant physical and sexual dysfunction, and wasting millions of dollars on "treatment". The general unfamiliarity with the normal anatomy and the unusual appearance of common dermatological conditions represent a considerable clinical challenge. Dermatologists, who are accustomed to instant visual diagnosis, need to take extra time to apply their knowledge of morphology and recognize the many conditions that mimic. We are uniquely qualified in assessing the pathology, identifying etiology, correcting barrier function, limiting inflammation, and addressing cutaneous itching and pain.

References


Vulvar dermatoses: A Primer for the Sexual Medicine Clinician

Kim Chae, Myung An Jeon

Abstract

Introduction Vulvar dermatoses are common dermatological conditions that affect the vulva, and can cause considerable pain, itching, pruritus, and burning, and have an adverse impact on a woman’s sexual function. Aim To provide an overview of the clinical features, etiology, and management options for the common vulvar dermatoses, including lichen sclerosis, lichen planus, vulvar dermatitis, and pruritus vulvae, and briefly describe the impact of vulvar dermatoses on sexual function. Methods The key words "vulvar dermatoses," "lichen sclerosis," "lichen planus," "vulvar dermatitis," and "vulvar pruritus," were entered into search engines and travestis to articles, with special attention given to those published within the last 5 years. Results Twenty-three thousand dermatological studies were found, and 20 publications were identified. Conclusions Vulvar dermatoses can cause chronic pain, itching, and dyspareunia, and can have a significant impact on sexual function. Vulvar dermatoses should be considered as a possible cause of dyspareunia, and the clinician should ask the patient about any vulvar dermatoses they may have experienced. Testing and treatment are essential for optimal symptom relief and sexual function. Vulvar lichen planus-lichen sclerosis overlap is an emerging observation. Few clinical reports exist with reviews of literature. We report a 42-year-old woman with a 2-year history of vulvar ulcerative vaginitis, mistakenly diagnosed as vaginal mucosal warts (condyloma acuminata). The lesions led to persistent symptoms with only gradual improvement. A sensitivity to vulvar lichen planus-lichen sclerosis overlap is an emerging observation. Few clinical reports exist with reviews of literature. We report a 42-year-old woman with a 2-year history of vulvar ulcerative vaginitis, mistakenly diagnosed as vaginal mucosal warts (condyloma acuminata). The lesions led to persistent symptoms with only gradual improvement.

Vulval lichen planus-lichen sclerosis overlap

Howard MD, Hal A23

11 Department of Medicine, Vincenzo S. Viscardi Hospital, Melbourne Australia, 12 School of Medicine, Weizmann Institute, Rehovot, Israel

Abstract

Vulval lichen planus-lichen sclerosis overlap is an emerging observation. Few clinical reports exist with reviews of literature. We report a 42-year-old woman with a 2-year history of vulvar ulcerative vaginitis, mistakenly diagnosed as vaginal mucosal warts (condyloma acuminata). The lesions led to persistent symptoms with only gradual improvement. A sensitivity to vulvar lichen planus-lichen sclerosis overlap is an emerging observation. Few clinical reports exist with reviews of literature. We report a 42-year-old woman with a 2-year history of vulvar ulcerative vaginitis, mistakenly diagnosed as vaginal mucosal warts (condyloma acuminata). The lesions led to persistent symptoms with only gradual improvement.

Keywords: vulvar dermatoses, lichen planus, lichen sclerosis, vulvar dermatitis, pruritus vulvae, sexual dysfunction, vulvar pruritus, vulvar dermatoses.
Diagnosis and Treatment of Vulvar Dermatoses.

Objective: To address vulvar dermatoses in an evidence-based manner, focusing on management strategies.

ABSTRACT

Vulvar symptoms such as pain, pruritus, and irritation are common and can significantly impact a woman’s quality of life. Despite this, vulvar symptoms are often not adequately addressed by healthcare providers to optimize care. The evaluation of patients with vulvar dermatoses begins with a thorough history and physical examination. Biopsy is indicated when concern exists for malignancy in the absence of a clear diagnosis. Treatment, if possible, should be evidence-based. Although many vulvar disorders are self-limited, pharmacological and psychological management can be challenging. A multidisciplinary approach involving gynecologic and dermatologic specialists is often necessary for optimal outcomes. In addition, the role of mesotherapy in the management of vulvar dermatoses is an emerging area of interest. This presentation will focus on the diagnosis and treatment of vulvar dermatoses, highlighting the importance of a comprehensive approach to patient care.

MIZLOVE Itchy-Cure Mesotherapy

LABIOPLASTY-M
Conclusion

Urologists can play an important role in the management of vulvovaginal disease.

Thank You
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The Korean Urological Congress and Expo 2018

발 행 2018년 4월 13일
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