

## 배뇨장애의 이해와 관리

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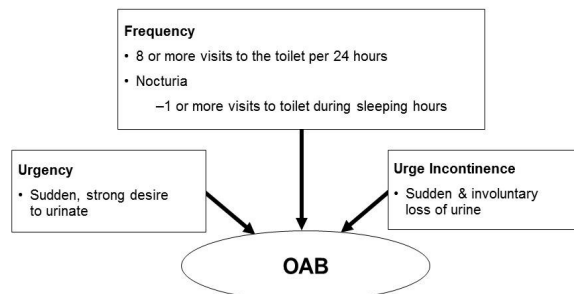
### 내용

- 배뇨증상
  - OAB (Overactive Badder)
  - BPH (Benign Prostate Hyperplasia)
- 막힘요로병증
- 혈뇨

### Causes of Urinary Frequency

- Bladder infection (with dysuria)
- Excessive fluid intake (particularly at night)
- Increased stress
- Pelvic tumors (BPH, Gyn. Mass)
- OAB
- Pregnancy

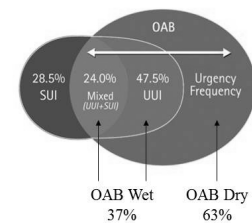
### OAB Symptoms



Milsom I, et al. *BJU Int*. 2001;87:760-766.  
Abrams P, et al. *NeuroUrol Urodyn*. 2002;21:167-178.

### Spectrum of OAB and Incontinence

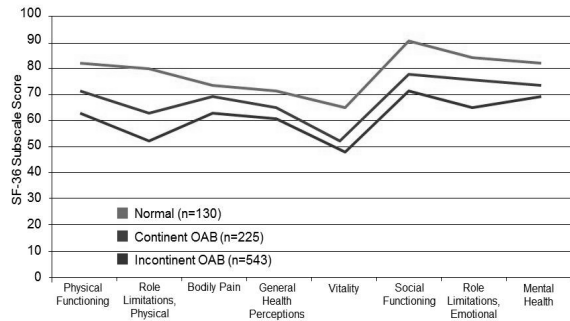
- The majority of people with OAB experience urgency without urinary leakage



SUI: stress urinary incontinence  
UI: urge urinary incontinence

Abrams P, et al. *NeuroUrol Urodyn*. 2002;21:167-178.  
Stewart WF, et al. *World J Urol*. 2003;20:327-326.  
Hampel C, et al. *Urology*. 1997;50(suppl 6A):4-14.  
Abrams P. *Urology*. 2003;62(suppl 5B):28-37.

## Both OAB Dry and OAB Wet Adversely Affect Quality of Life



Coyne K, et al. *Qual Life Res*. 2002;11:563-574.

## Who Is at Risk for OAB?

Urge Incontinence	Stress Incontinence	Any Incontinence
<ul style="list-style-type: none"> <li>Advanced age</li> <li>Diabetes</li> <li>Urinary tract infection</li> <li>Smoking</li> <li>Neurologic disorders</li> <li>Pelvic floor weakness</li> <li>Psychological/sexual problems</li> <li>Pelvic organ prolapse</li> <li>Family history</li> <li>Normal pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>White race</li> <li>High body mass index</li> <li>High waist-to-hip ratio</li> <li>Parity</li> <li>Previous surgery</li> </ul>	<ul style="list-style-type: none"> <li>Advanced age</li> <li>White race</li> <li>Level of education</li> <li>Functional or sensory impairment</li> <li>High body mass index</li> <li>Previous hysterectomy</li> <li>Stroke</li> <li>Diabetes</li> <li>Chronic obstructive pulmonary disease</li> </ul>

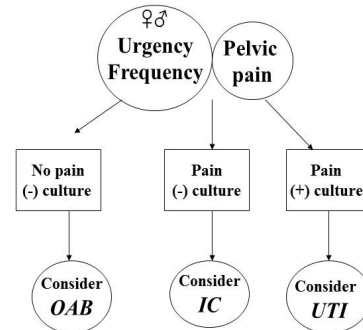
Mitsum L, et al. *Am J Manag Care*. 2000;6(suppl):S565-S573.

## Other Conditions/Medications Impacting Symptoms of OAB

Coexisting Conditions	Drugs Associated With Incontinence
<ul style="list-style-type: none"> <li>Chronic constipation</li> <li>Urinary tract infection</li> <li>Confusion or delirium</li> <li>Diabetes</li> <li>Hypercalcemia</li> <li>Psychiatric disease</li> <li>Urologic disease</li> </ul>	<ul style="list-style-type: none"> <li>Diuretics</li> <li>Antihistamines</li> <li>Anxiolytics</li> <li>Alpha-blockers</li> <li>Sedatives and hypnotics</li> <li>Tricyclic antidepressants</li> </ul>

Wein AJ, Rorner ES. *Int J Fertil*. 1999;44:56-66.  
Shah D, Badlani G. *Rev Urol*. 2002;4(suppl 4):S38-S43.  
ASCP Web site: <http://www.ascp.com/public/pubs/tcp/1999/special/diagnosing.shtml>.

## Frame for understanding bladder health conditions (*in the absence of hematuria*)



## OAB 진단 척도 (8개 문항)

아래와 같은 증상으로 인해 얼마나 많이 지장을 받았습니까?	전혀 지장 받지 않았다	약간 지장 받았다	어느 정도 지장 받았다	꽤 지장 받았다	많이 지장 받았다	아주 많이 지장 받았다
1. 낮에 자주 소변을 보는 것?	0	1	2	3	4	5
2. 소변을 보고 싶은 불편한 충동?	0	1	2	3	4	5
3. 아무 예고 없이 갑작스럽게 소변을 보고 싶은 충동?	0	1	2	3	4	5
4. 밤의 이나에 약간의 소변을 지르는 것?	0	1	2	3	4	5
5. 밤에 소변을 보는 것?	0	1	2	3	4	5
6. 밤에 소변을 보기 위해 자다가 깨어나는 것?	0	1	2	3	4	5
7. 억제할 수 없이 소변을 보고 싶은 충동?	0	1	2	3	4	5
8. 소변보고 싶은 강한 욕구가 생기면서 소변을 지르는 것?	0	1	2	3	4	5
환자가 남성입니까?	□ 만일 남성이면, 총 점수에 2점을 더하세요.					

더한 점수가 8점 이상이면, 과민성 방광이라고 할 수 있습니다

## Differential Diagnosis: OAB and Stress Incontinence

### Symptom Assessment

Symptoms	Overactive Bladder	Stress Incontinence
Urgency (strong, sudden desire to void)	Yes	No
Frequency with urgency (>8 times/24 h)	Yes	No
Leaking during physical activity; eg, coughing, sneezing, lifting	No	Yes
Amount of urinary leakage with each episode of incontinence	Large (if present)	Small
Ability to reach the toilet in time following an urge to void	Often no	Yes
Waking to pass urine at night	Usually	Seldom

Wein AJ, Rorner ES. *Int J Fertil*. 1999;44:56-66.

## Methods for Treating OAB

- Behavior modification
- Physiotherapy/pelvic-floor muscle training
- Other nonpharmacologic therapies
- Pharmacotherapy

Wein AJ, Rorner ES. *Int J Fertil.* 1999;44:56-66.

## Behavior Modification

- Bladder retraining
  - Increase bladder capacity
  - Voiding diary
- Lifestyle changes
  - Avoid caffeine and alcohol
  - Reduce fluid intake
  - Improve mobility
  - Address other health issues

Wein AJ, Rorner ES. *Int J Fertil.* 1999;44:56-66.

## 과민성 방광 치료제 분류

방광 용적을 증가시키는 약제

- 항콜린성 제제(항무스카린성 제제) Solifenacin, Tolterodine
- 근이완제 Oxybutinin, Propiverine
- 칼슘길항제 Nifedipine
- 베타아드레날린성 촉진제 Terbutaline
- 삼환계 항우울제 Imipramine
- Dimethyl sulfoxide (DMSO), Polysynaptic inhibitors, K 통로
- 개방제, prostaglandin 길항제,
- 방광 출구 저항을 증가시키는 약제
  - 알파아드레날린성 촉진제 Ephedrine
  - 삼환계 항우울제 Imipramine
  - 베타아드레날린성 차단제 Propranolol
  - 여성 호르몬 Estrogen
- 요 생성을 감소시키는 약제
  - 항이뇨 호르몬(ADH) Minirin

## Pharmacologic Therapy

- Antimuscarinic agents are the mainstay for treating OAB
- OAB symptoms are relieved by
  - inhibition of involuntary bladder contractions
  - increased bladder capacity
- Treatment can be limited by side effects such as dry mouth, GI effects (eg, constipation), and CNS effects

## Five Human Muscarinic Receptors Have Been Cloned

- M<sub>1</sub>: Cortex, hippocampus, salivary glands
- M<sub>2</sub>: Hindbrain, heart, smooth muscle
- M<sub>3</sub>: Brain, salivary glands, heart, smooth muscle
- M<sub>4</sub>: Basal forebrain, striatum
- M<sub>5</sub>: Substantia nigra

Caulfield MP. *Pharmacol Ther.* 1993;58:319-379.  
Chapple CR et al. *Urology.* 2002;60:82-89.

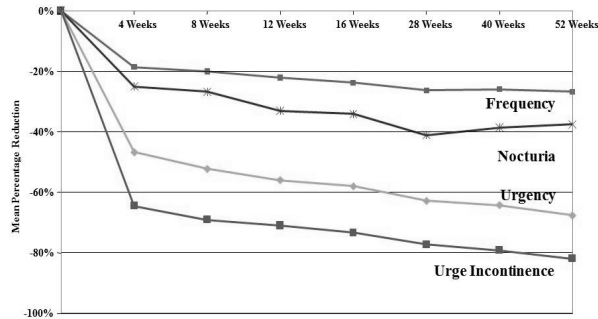
## 과민성방광 약물

- Solifenacin (Vesicare)
- Tolterodine (Detrusitol)
- Propiverine (BUP-4)

### Contraindications:

1. 폐색성 증상
2. 잔뇨량 ≥ 100 ml
3. 녹내장

### 투여기간에 따른 증상의 호전도



Haab F et al. Eur Urol 2005

### 부작용

#### Treatment-emergent adverse event

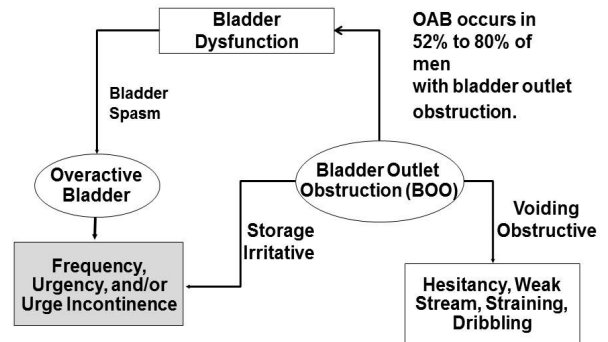
Averse Event (AE)	Placebo (n=223) (%)	Vesicare5/10mg (n=505) (%)
Dry mouth	2.7	15.8
Constipation	2.2	6.9
Blurred vision	0.9	0.8

Linda C et al, BJU,102,(2008):1120-1127

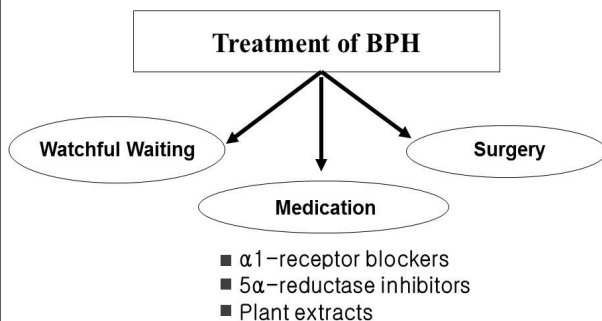
### 항콜린성 약물의 처방 요령

- 적어도 2주간 치료,
  - 항콜린성 부작용 (입이 마르고, 시각장애, 변비)이 참을 만하고 증상의 개선이 있으면 치료 계속
- 충분한 증상 개선 (-); 용량 증가
- 여전히 증상 개선 (-); 다른 약제, 복합 약제

### BPH는 OAB 증상을 동반할 수 있다



### Treatment of BPH



#### Alpha blockers

- 치료 1-2주내에 증상 개선됨

#### 5 alpha reductase inhibitor

- 증상 개선은 1달내에 나타나지만 대개는 6-12개월이 지나야 최대효과

## 내과적 약물치료

Recommendations of the 5th International Consultation on BPH in 2001

두가지 약물 요법은 서로 다른 경로의 작용기전을 가지고 서로 보완적인 효과를 보인다

### 알파차단제

• 교감신경 활동의 차단으로 전립선과 방광경부 평활근의 이완을 통해 증상과 요속을 향상시킴.



### 5 알파 환원효소억제제

• 호르몬작용으로 전립선 크기의 감소를 통해 증상과 요속을 개선시키고 전립선비대증의 결과를 예방함.

## Pharmacotherapy in BPH patients : practical aspects

- Small BPH (<30gm) :  $\alpha$ -blocker
- Large BPH ( $\geq 30$ gm)  
:  $\alpha$ -blocker + 5- $\alpha$  reductase inhibitor  
(finasteride, dutasteride)

## 정밀검사필요

- Elevated PSA (>4ng/ml)
- Abnormal DRE
- Abnormal TRUS
- hematuria, bladder stone, UTI
- Impaired renal function, hydronephrosis
- Recurrent urinary retention

## Urinary Tract Obstruction (Obstructive Uropathy)

- *Obstruction increases susceptibility to infection and to stone formation*
- *Unrelieved obstruction almost always leads to permanent renal atrophy, termed hydronephrosis or obstructive uropathy*
- Many causes of obstruction are surgically correctable or medically treatable
- Obstruction may be sudden or insidious, partial or complete, unilateral or bilateral; it may occur at any level of the urinary tract from the urethra to the renal pelvis.
- Caused by lesions that are *intrinsic* to the urinary tract or *extrinsic* lesions that compress the ureter

## Treatment

- F-Cath : Acute Urinary retention, Nonreflex Neurogenic Bladder (Latex 2주간격, Silicon 4주간격), 16Fr
- Cystostomy
- Percutaneous Nephrostomy
- Double J Catheter

## 혈뇨

- 육안적 혈뇨의 70%는 방광암, 신장암과 관련
- 빈혈, 통증, 불안, 아래요로박힘증
- Cyclophosphamide, 방사선 치료; 출혈성 방광염

### 혈뇨의 관리

- 수분섭취를 증가시키고 활동량을 줄임
- Tranexamic acid 250mg tid
- 항응고제와 동시투여 금기
- 활동성 혈전색전증 환자에도 금기
- 18Fr F-Cath & Bladder Irrigation
- 3 way BI
- 수술