Common Problem of the Genitourinary System

Urinary Incontinence, UTI , change in urine color and pain

本講義表格資料取自Dains, J.E., Baumann, L.C., & Scheibel, P. (2007). Advanced assessment and clinical diagnosis in primary care. (3rd ed). St. Louis: Mosby.

圖片取自Seidel HM, Ball JW, Dains JE, Benedict GW. (1999). Mosby's guide to physical examination. St. Louis, MO: Mosby.

Urinary incontinence

Urinary incontinence

- Prevalence
  - 26% during reproductive years
  - 30~40% in postmenopause years
  - In elderly: male: 8~22% , Female 15~30%
  - in nsg home: 50%
- Types
  - Stress incontinence
  - Urge incontinence
  - Overflow incontinence
  - Incontinence from reversible causes
  - Mixed type

Stress incontinence

- Leakage of urine during activity that increase abd. Pressure, such as coughing, sneezing,…
- most often in women
- Small volume
- is caused by hypermotility at the base of the bladder and urethra associated with pelvic floor relaxation or intrinsic urethral weakness

Urge incontinence

- An abrupt and strong desire to void with inability to delay urination and is caused by bladder hyperactivity or hypersensitive bladder
- Detrusor muscle overactivity
  - Brain disorder fail to prevent detrusor muscle contraction
- Urgency the primary symptom of detrusor instability
- Large volume

Overflow incontinence

- Overdistention of the bladder caused by
  - an underactive or acontractile detrusor muscle
  - Sphincter-detrusor dyssynergia
  - Bladder outlet or urethral obstruction
  - Sphincter weakness
    - Damage to urethra or innervation
    - Pelvic floor muscle relaxation
    - Increases with postural change
- Dripping indicating overflow incontinence
- Small volume

Incontinence from reversible causes

- D : delirium, dementia, depression
- I : infection
- A : atrophic vaginitis/urethritis
- P : pharmaceuticals
- E : endocrine/excess urine production
- R : restricted mobility, retention
- S : stool impaction

Medications that can cause or contribute to UI

- Decrease bladder contraction with retention (overflow UI)
  - Anticholinergics, antidepressants, antipsychotics, sedatives-hypnotics, antihistamines, narcotics, alcohol, calcium channel blockers, beta-adrenergic agonist,
- Sphincter contraction with outflow construction
  - alpha-adrenergic agonist (overflow UI)
- Contraction stimulated by high urine flow (urge UI)
  - Diuretics, caffeine
- CNS depression
  - sedatives-hypnotics, alcohol

The maturation of CNS in control of urination

- Birth to 6 months
  - Bladder emptying is an uninhibited reflex action
- 6~12 months
  - Bladder emptying is less frequent because of CNS inhibition of reflex action
- 1 ~ 2 years
  - Child consciously receives bladder fullness; CNS inhibition increases
- 3 ~ 5 years
  - At age 5 years, most children are aware of bladder fullness; they develop the ability to inhibit the need to void both voluntarily and unconciously

Enuresis

- Involuntary discharge of urine in children
- Primary enuresis
  - A child has never achieved consistent dryness.
  - Only nocturnal
  - A developmental delay or maturational lag
  - Family history, higher in boys than in girls
- Secondary enuresis (developmental enuresis)
  - May relate to changes o stresses in child's life, or as a result of genital trauma, infection, distended colon, or fecal impaction
  - Occurs in a child who has had a period of dryness of more than 6 months

Nature of symptom

- Frequency of voiding
  - Increase in frequency: detrusor instability or hypersensitivity, or large volume of urine
  - Decrease in frequency: overflow incontinence
- Characteristics of stream
  - Small caliber or intermittent: obstructive
- Abnormal daytime voiding: urological abnomality
- Sleeping apnea interfere with child's ability to wake in response to void stimuli

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Urinary Incontinence*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Incontinence from anatomical causes			
Stress incontinence	Small-volume incontinence with coughing, sneezing, laughing, running; history of prior pelvic surgery	Pelvic floor relaxation; cystocele, rectocele; lax urethral sphincter; loww of uring with provocative testing; atrophic vaginitis	U/A and culture; PVR normal
Urge incontinence	Uncontrolled urge to void; large-volume incontinence; history of CNS disorders, such as stroke, multiple sclerosis, parkinsonism	Normal examination	U/A and culture; PVR normal; office cystometrography: < 300-350-ml volume; BUN, creatinine, urodynamic testing
Overflow incontinence	Small-volume incontinence, dribbling, hesitancy; In men symptoms of enlarged prostate: nocturia, dribbing, hesitancy, decreased force and caliber of stream; in neurogenic bladder: history of bowel problems, spinal cord injury, or multiple sclerosis	Distended bladder; prostate hypertrophy, stool in rectum; fecal impaction; in neurogenic bladder: evidence of spinal cord disease or diabetic neuropathy; lax sphincter; gait disturbance	U/A and culture; PVR>100 ml; BUN, creatinine; in neurogenic bladder, refer for testing

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Urinary Incontinence*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Incontinence from reversible factors			
Medications	Hypnotics, diuretics, anticholinergic agents, α-adrenergic agents, calcium channel blockers	Normal except for findings related to other physical conditions	U/A to rule out urinary tract problems; blood chemistry to rule out systemic problem
Urinary tract infection (UTI)	Dysuria, urgency, daytime accidents	Frequency, odor, fever	U/A and culture
Vaginitis	Itching, odor	Discharge, atrophic vaginitis, evidence of sexual abuse	Gram stain, KOH, culture
Constipation/ fecal impaction	Abdominal pain	Soiling; stool felt in colon and /or ampulla	None
Change in mental or functional status	Change in mental status; impaired mobility; new environment	Impaired mental status; impaired mobility	U/A and culture; blood chemistry
Diabetes insipidus (DI)	History of trauma to head; thirst, frequency	Weight loss	U/A specific gravity > 1.015
Diabetes mellitus (DM)	Thirsty, increased frequency	Weight loss	U/A; serum glucose

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Urinary Incontinence cont'd*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Enuresis from organic causes			
Genitourinary causes	UTI history; dribbling; urine leakage	Fever, abdominal tenderness; anatomical abnormalities (extopic ureter); examination may be normal	U/A and culture; specific gravity; referral for testing
Neurological causes	Head injury; spinal cord injury; polydispia, polyuria; sleep apnea	Lax sphincter, spinal tuft, neurological deficits; altered gait; examination may be normal	U/A and culture; specific gravity to rule out other causes
Enuresis from nonorganic causes			
Primary enuresis	Child has never been dry; may have family history	Normal examination; developmental delay	U/A and culture; specific gravity to rule out other causes
Developmental (secondary) enuresis	Child has been dry for 6 mo in a row; changes or stresses in child's life	Examine for genital trauma or abuse, infection, distended colon, fecal impaction	U/A and culture; specific gravity to rule out other causes; screen for glycosuria
Small bladder	Void frequently, not in excessive volume	None	Bladder capacity = child's age + 2, for children <11 yr
Sickle cell anemia	Family history	Findings related to sickle cell disease	U/A and culture; specific gravity

Focused Hx

- Could this be the result of reversible factors ?
  - What medications are you taking?
  - Do you have any of the following urinary tract symtoms: urgency, frequency, burning, pain, blood I urine, flank pain?
  - Do you have vaginal dryness or itching?
  - Do you have pain/discomfort with sexual activity?
  - Have you had changes in bowel function?
  - When was your last bowel movement?
  - Are you feeling depressed?
  - Are you aware of incontinence?
  - How mobile of you?
  - Are you able to get to the toilet easily?
  - Do you have any chronic health problems?

Focused Hx (cont)

- What do the presenting symptoms tell me?
  - What is the primary symptoms (urgency dripping, lack of sensation, nocturia, abd. discomfort, leakage with laughing, coughing, or sneezing)?
  - How frequent do you urinate?
  - How much urine is voided each time?
  - Do you have difficulty starting to urinate?
  - Does your urine stream start and stop while you are urinating?

Focused Hx (cont)

- Are there any other symptoms that will point me in the right direction?
  - How much fluid do you drink in a day?
  - How much caffeine and alcohol do you drink?
  - What time of day do you drink fluids?
  - How thirsty are you?
  - Have you lost or gain weight recently?

Focused Hx (cont) --In children

- Is this primary or secondary enuresis
  - Has the child had ever consistent dryness for at least 6 months?
- Is this organic enuresis?
  - Does the child have pain on urination
  - Does the child have intermittent daytime wetness?
  - Does the child seem very thirsty and urinate a lot?
  - Has the child had nervous system trauma ?
  - Does the child have constipation or encorpresis
  - Does the child have constant wetness or dripping throughout the day?
  - Does the child have an abnormal steam. Such as dribbing or hesitancy?
  - Has the child had a change in gait?
  - Has the child had a lumber puncture recently?
  - Does the child snore or have apnea at night?
  - Does the child complaint of rectal itching at night?
- Risk factors for non-organic enuresis
  - Sick cell disease, family hx, birth order/twin

Diagnostic reasoning: Focused PE

- Mental status exam
- Observe gait
- Take VSS
- Exam. Abd.
- Exam. genitalis in males
- Perform pelvic exam in female
- Perform provocative stress testing
- Perform digital rectal exam
- Conduct neurological exam
- Exam and palpate the spine in children
- Perform masuculo-skeletal exam
- Postvoid residual
- Observe voiding

Lab and diagnostic studies

- U/A
- Specific gravity
- Urine culture
- Urine cytology
- Bladder diary
- BUN/Creatinine
- Vaginal specimen microscopy, molecular testing, or culture
- Office cyctometrography
- Complete urodynamic testing
- Cyctoscopy and contrast radiography
- Ultrasound

Differential diagnosis

- Stress incontinence
- Urge incontinence
- Overflow incontinence
- Incontinence from reversible causes
- Mixed incontinence
- Enuresis from organic causes
- Enuresis from non-organic causes

UTI,
Change in appearance and pain

S/S of UTI

- Upper UTI, pyelonephritis or lithiasis
  - Fever, chills
  - Nausea, vomiting
  - Acute pain
    - in the back or adb.: Upper UTI, pyelonephritis
    - Flank pain: stretching of renal capsule
    - Local back pain radiate to thigh: urinary tract stone
  - Nocturia, urgency and void of small amounts

Color change

- Hematuria
  - At the beginning: urethra
  - At the end: posterior urethra or bladder base
  - Total: kidney, ureter, or bladder
  - Without pain: tumor of bladder or kidney
  - With pain (dysuria: bladder infection or lithiasis)

Pain and discomfort

- Lower back, flank or abdominal pain
  - Ureteral and kidney
- Suprapubic discomfort
  - Bladder
  - Infection, obstruction or distention result of tumor or stone
- Dysuria
  - Uretritis, prostatitis, cystitis, mechanical irritation of the urethra
  - Penile discharge with frequency, urgency, dysuria: anterior urethral irritation and STI
- Scrotum or testicle (in male)
  - Inflammation of thetesticles, epididymitis or torsion of a testicle

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Genitourinary problems in males*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Cystits/ urethritis	Frequency, urgency, dysuria; nocturia with low back pain	Discharge may be present; may have suprapubic tenderness	Urine dipstick: positive leukocyte esterase; hematuria; urinalysis with microscopic examination; segmented urine collection; Gram stain; C & S
Pyelonephritis	Fever, chills, back pain, nausea and vomiting, toxic appearance; some patients also have frequency and dysuria	Feels and looks ill; temperature > 101^{O} F; CVA tenderness; abdomen may be tender	Microscopic examination: WBC_S with or without bacteria; crystalline structures may be present; radiograph or ultrasound
Urolithiasis	Pain, hematuria; may have symptoms of secondary infection; renal colic: pain that radiates to inner thigh; nausea, vomiting	May have CVA tenderness; looks ill during periods of acute pain; may have abdominal distention	Urinalysis: gross or microscopic hematuria; WBC_S with or without bacteria; crystalline structures may be present; radiograph or ultrasound

Focused Hx

- Have you had a fever or chills?
- Have you had nausea or vomiting ?
- Have you had acute pain in the abd. or back?
- Has the infant been irritable or had anorexia or lethargy?
- Have you had blood in your urine? When in the stream does it occur?
- Do you have pain with urination?
- Do you have bleeding with urination?
- Have you done any streneous exercise recently?

Urine dipstick

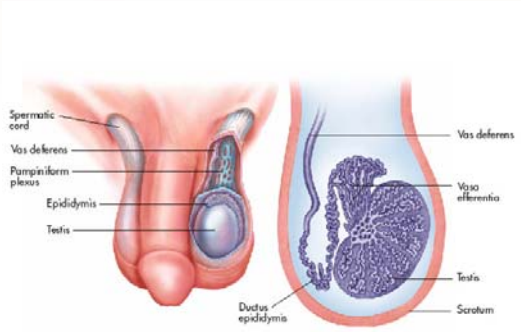
- Leukocyte esterase strip
  - Turn purple in 60 seconds: > 5 WBC in urine
  - Indicating urethritis (75% sen. 95% spe)
- Nitrite strip
  - Turn pink within 30 second : nitrite produced by > 105 organisms/ml
- Protein dipstick
  - Detect amount when > 150~300 mg/day
  - In progress increasing: 1+ (30 mg/day), 2+ (100 mg/day), 3+ (300 mg/day), 4+ (500~1000mg/day)

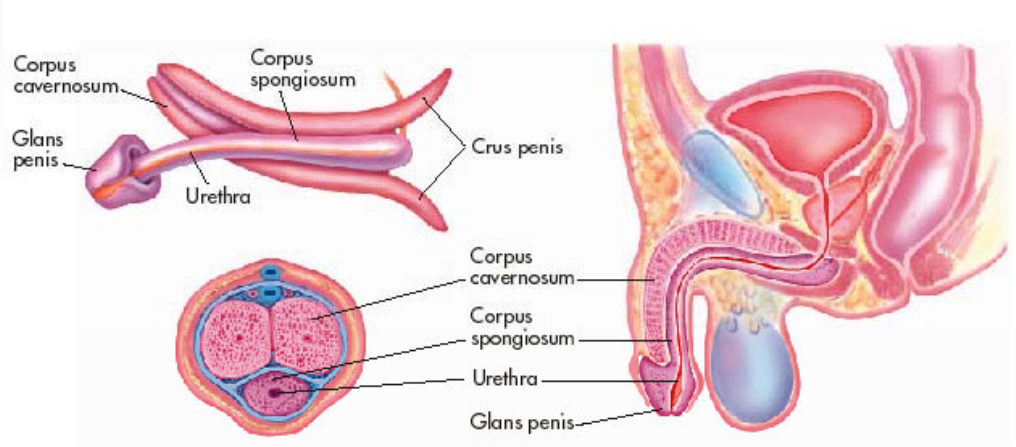
Common Problem of the Genitourinary System specific in Males

Infection, inflammation, urine outlet obstruction, neoplasm

男性生殖器官之構造

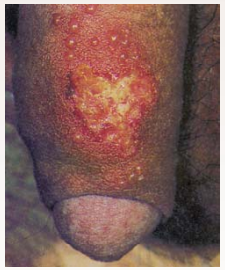
- 陰莖：陰莖海綿體、尿道海綿體
- 陰囊：
  - 睪丸－(精索):4~5x3x2cm
  - 附睪
  - 輸精管

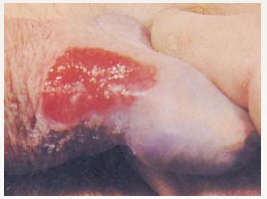


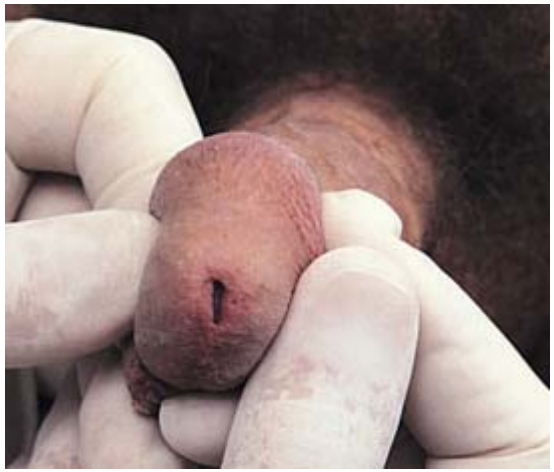


男性生殖器官之檢查

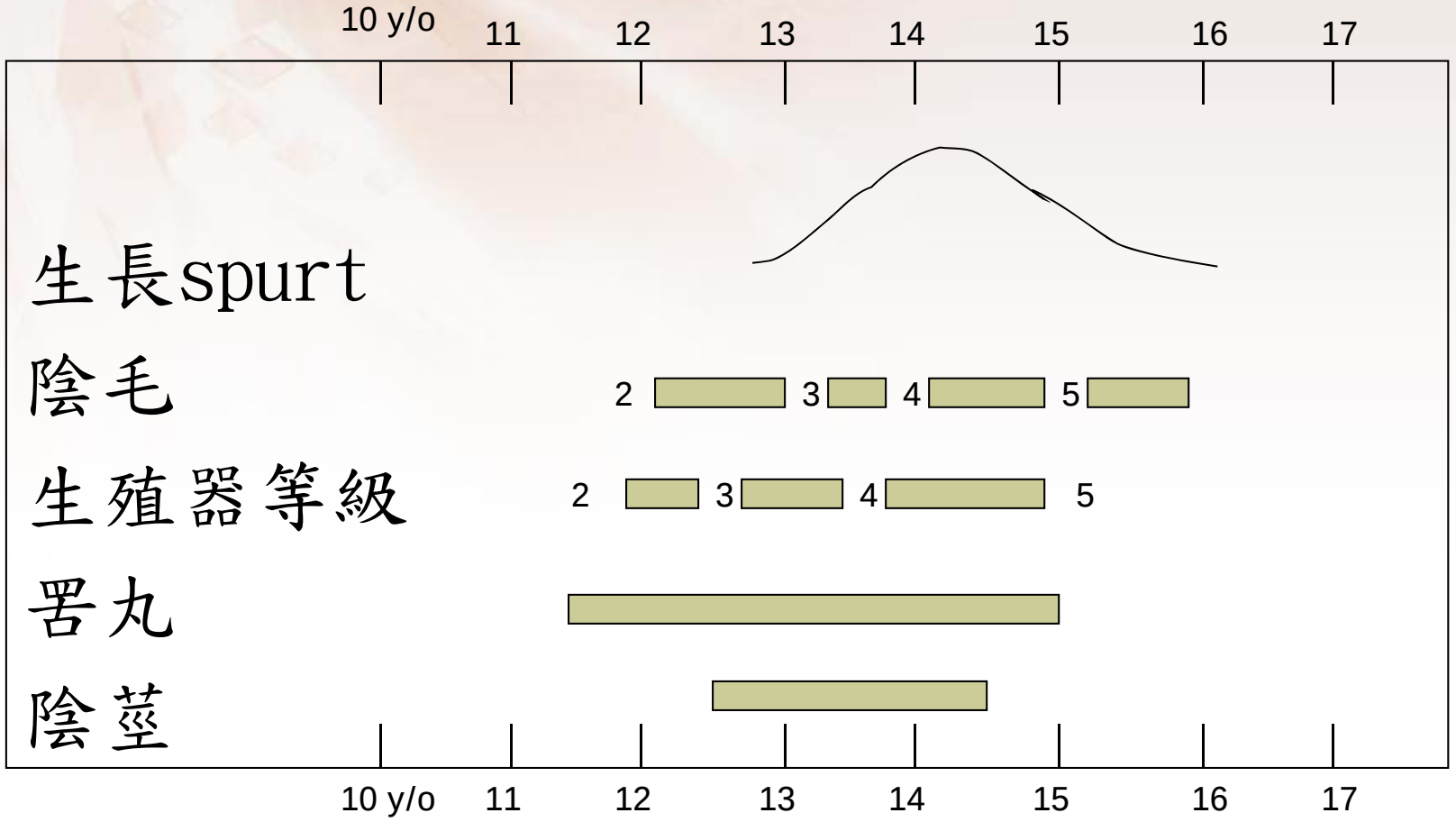
- 檢查內容：
  - 陰莖：外觀：尿道口、包皮
  - 睪丸：大小
  - 陰囊：水腫、紅腫、結節







男性成熟度：

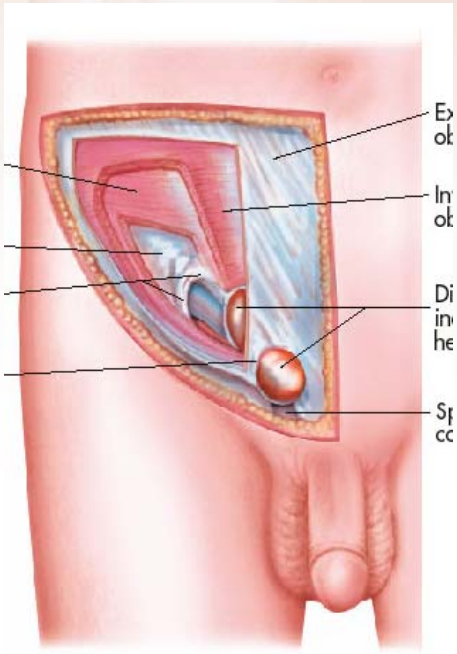

10 y/o
11
12
13
14
15
16
17
生長spurt
陰毛
2
3
4
5
生殖器等級
2
3
4
5
睾丸
陰莖
10 y/o
11
12
13
14
15
16
17

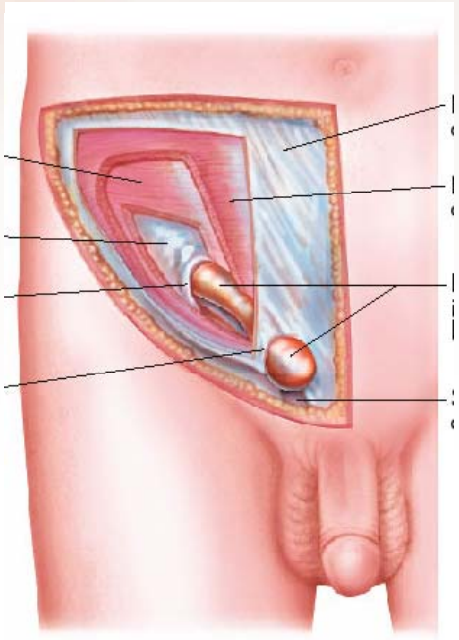
常見陰囊疾病

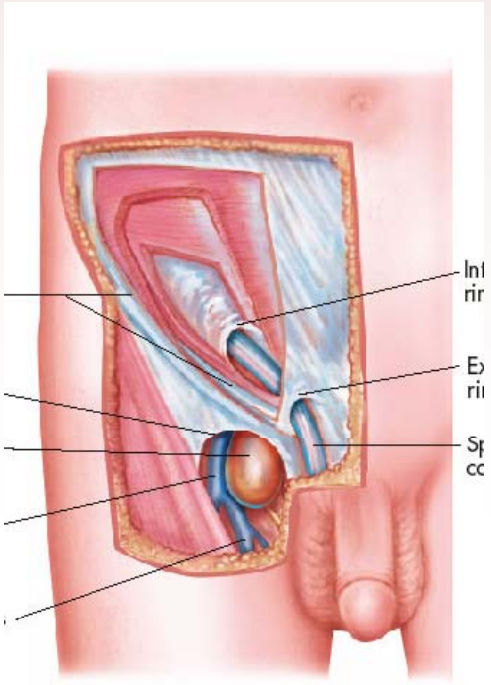
- 陰囊水腫：
  - swell，上方可容手指按合
- 陰囊hernia：
  - swell，上方不容手指按合
- 精索靜脈曲張：
  - swell，collapse after lift
- 副睪炎：
  - pain，related to UTI
- 精索扭轉：
  - pain，not related to UTI
- 腫瘤：不透光
- 結節：不透光
- 囊腫：可透光

Inguinal Hernia

- Direct hernia
- Indirect hernia
- Femeral hernia







Kidney, prostate and bladder neoplasm

- Occur more in male than in female
- Kidney, and bladder neoplasm
  - more common in elderly men
  - Produce painless hematuria
- Prostate cancer may produce symptoms of outlet obstruction
  - Prostate-specific antigen
    - < 1 ng/ml: normal
    - 1~ 4 ng/ml: within reference range
    - 4~10 ng/ml : grey zone
    - > 10 ng/ml : malignancy

Penile discharge

- Urethritis result from infection
  - Gonococcal urethritis
    - Yellow-greenish drainage
  - Nongonoccal urethritis (NGU)
    - 40% *Chlamydia trachomatis*
    - Reiter syndrome: urogenital infection, arthritis, conjunctivitis, oral mucosal ulcer, and dermatitis
- Red, inflamed Glans penis
  - Yeast infection
  - Drug reaction: tetracycline

Testicular torsion

- Sudden onset of testicular pain that radiates to groin; may also have lower abdominal pain
- An emergency, intervention must take place within the first 4~6 hours to salvage the testicle from infarction

Hematuria

- Timing
  - Initial: anterior urethra lesion
  - Terminal: prostatic lesion or posterial urethra
  - Total: kidney or ureters
  - Bladder lesions may produce bleeding independent of micturition
- Pain
  - Hematuria with pain usually indicates the passage of stone or slaughed renal papilla
  - Painless hematuria: urinary tract tumor

Urinary stream

- Hesitancy, slow urinary stream, dribbling:
  - In age over 50 male: BPH

The American Urological Association Symptom Index
Patients rate their answers to each question on a scale of 0 to 5.

QUESTIONS	AUA SYMPTOM SCORE (CIRCLE ONE NUMBER ON EACH LINE)+					
	NOT AT ALL	LESS THAN 1 TIME IN 5	LESS THAN HALF THE TIME	ABOUT HALF THE TIME	MORE THAN HALF THE TIME	ALMOST ALWAYS
Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished voiding?	0	1	2	3	4	5
Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5
Over the past month, how ofter have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5
Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5
Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5
Over the past month, how many times did you typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	0	1	2	3	4	5

From Barry MJ, Fowler FJ Jr, O'Leary MP et al: The American Urological Association Symptom Index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association, J Urol 48(5):1549,1992.

+AUA Symptom Score = sum of above circled numbers. Symptoms are classified as mild (0-7), moderate (8-19), or severe (20-35).

Problems of prostate

- Chronic prostatitis, chronic pelvic pain syndrome (CP-CPPS)
  - Pelvic pain that has been present for at least 3 of the preceding 6 months with no bacterial cause
- BPH
  - AUA index
  - Digital exam
  - PSA test < 4 ng/ml
    - 4~ 10 ng/ml need bipsy to R/O cancer

Grade	Protudes into rectum
I	< 1 cm
II	1~2 cm
III	2~3 cm
IV	> 3 cm

Nocturia nd polyuria

- Nocturia
  - Most male do not need to void during the night. Once is possible depend on fluid intake.
  - Primary bladder lesion from infection, stone, or tumor can produce nocturia
  - Prostate enlargement characteristically produces nocturia
- Polyuria
  - > 3L/day
  - Early indication of renal disease due to decrease the ability to concentrate urine.
  - Alcohol can inhibit ADH and may cause polyuria
  - Gluocosuria: diuretic effect

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Genitourinary problems in males*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Acute bacterial prostatitis	Chills, high fever, urinary frequency; urgency; perineal pain and low back pain; varying degrees of obstructive symptoms, dysuria or burning, nocturia, hematuria, arthralgia, and myalgia	Temperature > 101^{O} F;prostate gland tender, swollen, indurated, warm; do not massage as can cause bacteremia	Urinalysis; urine culture; prostate secretion culture
Chronic bacterial prostatitis	Common cause of recurrent cystitis in men; same pathogen as in prostate secretion; may be asymptomatic; commonly have low back pain and perineal pain, urinary frequency, and painful urination	Infection can involve scrotal contents, producing epididymitis; palpation of prostate reveals no specific findings; may be moderately tender and irregularly indurated or boggy; may have copious secretion	Culture prostatic secretion; culture postmassage urine; WBC_S present in EPS and VB 3
Chronic prostatitis, chronic pelvic pain syndrome (CP-CPPS); can be inflammatory or noninflammatiory	Pelvic pain present for at least 3 of preceding 6 months, with no bacterial cause; may be accompanied by additional symptoms such as dysuria, urgency, frequency, and backache; may or may not have had obstructive voiding symptoms	Normal prostate examination	Inflammatory: absence of bacteria and presene of WBCs in semen, EPS, or VB3

DIFFERENTIAL DIAGNOSIS OF *Common Causes of Genitourinary problems in males cont'd*			
CONDITION	**HISTORY**	**PHYSICAL FINDINGS**	**DIAGNOSTIC STUDIES**
Asymptomatic inflammatory prostatitis	Symptoms of another genitourinary problem; no pain	Specific for another genitourinary disorder	WBCs found in expressed prostatic secretions
Epididymitis/ orchitis	Abrupt onset over several hours; febrile; pain in scrotum and /or testicles	Tender, swollen epididymitis and / or testicles; elevation of affected testicle may lessen discomfort; may have fever	Doppler flow studies with color
Testicular torsion	Sudden onset of testicular pain that radiates to groin; may also have lower abdominal pain	Exquisitely tender testicle; testicle may ride high because of shortened spermatic cord; cremasteric reflex absent	Scrotal ultrasonography; this is a surgical emergency
Benign prostatic hyperplasia (BPH)	Hesitancy, slow urine stream, dribbling, nocturia	Prostate protrusion into rectum; median sulcus reduced; prostate boggy	TRUS; PSA
Prostate cancer	Hesitancy, slow urine stream, dribbling, nocturia; low back pain	Prostate protrusion into rectum; prostate hard	TRUS; PSA elevated; biopsy
Bladder or kidney tumor	More common in men than women; patients often have history of smoking or alcohol abuse	Usually no symptoms other than silent hematuria	U/A: hematuria

Focused Hx

- **Are systemic or acute symptoms present ?**
  - Have you had fever, nausea, or vomiting ?
  - Are you positive for HIV infection or receiving Chemotherapy ?
  - Are you having acute pain ?
  - Have you been able to pass any urine ?
- **Is there Hematuria ?**
  - Have you noticed blood in you r urine ?
  - Is there blood every time you urinate or just occasionally ?
  - Does the blood start with the beginning of urination, or occur only at the end of urination ? Is there blood without urinating ?
  - Do you have pain with the blood ?

Focused Hx

- **Can the symptoms be localized to a part of the urinary tract ?**
  - Do you have trouble starting to urinate (e.g., slow/weakened urinary stream, dribbling of urine) ?
  - Do you have low back, flank, or abdominal pain ?
  - Do you have aching in the perineal area ?
  - Do you have suprapubic discomfort ?
  - Do you had involuntary urination ?
  - Do you have frequency, urgency, dysuria, or penil discharge ?
  - Do you have to urinate at night ?
  - Do you have an excessive volume of urine ?

Focused Hx (cont)

- **Are there any specific risk factors to point me in the right direction ?**
  - Have you had this or similar problems before ? If yes, when and how often have you had this problem ?
  - Have you had this or similar problems before ? If yes, when and how often have you had this problem ?
  - How old are you (What is the patient‘s age) ?
  - Have you been confined to bed (especially if elderly) ?
  - Are you sexually active ? How many partners do you have ?

Focused Hx (cont)

- **What else could this be ?**
  - Have you had recent instrumentation in the urethra or urinary tract ?
  - Have you had recent treatment for an STI ?
  - Have you been recently diagnosed with but not treated for an STI ?
  - What drugs have you taken (prescription, over the counter, or illicit) ?
    - Amonoglycoside, NSAID, Iodinayed radicontrsat media, ACE inhibitor…
  - What is your occupation
  - What are your hobbies (toxic exposure) ?

Diagnostic Reasoning-Focused PE

- **Obtain Vital Signs**
- **Inspect Skin and Mucos Membranes**
- **Palpate and Percuss for Flank Pain at the Costovertebral Angel**
- **Palpate and percuss the Abdomen**
- **Inspect and Palpate the External Genitalia**
- **Observe Voiding Perform Digital Rectal Prostate Examination**

Lab and diagnostic studies

- Urine Dipstick
- Urinalysis With Microscopic Examination
- Segmemted Urine Collection for Gram Stain and Culture and Sensitivity
- Urine Flow Studies(Uroflowmetry)
- Gram Stain
- Culture and Sensitivity
- Molecular Teating for Infectious Organisms
- Creatinine and Blood Urea Nitrogen
- Prostate-Specific Antigen
- Radiography
- Ultrasound
- Computed Tomography
- Doppler Flow Studies
- Biopsy

Q&A