

Symptoms of Disorders of the Urinary Tract

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Kidney Pain

Typical renal pain is felt as a dull and constant ache in the costovertebral angle just lateral to the sacrospinalis muscle and just below the 12th rib.

This pain often spreads along the subcostal area toward the umbilicus.

It may be caused by sudden distention of the renal capsule.

Ureteral Pain (colic)

severe colicky pain that radiates from the costovertebral angle down toward the lower anterior abdominal quadrant, along the course of the ureter.

In men, it may also be felt in the bladder, scrotum, or testicle.

In women, it may radiate into the vulva.

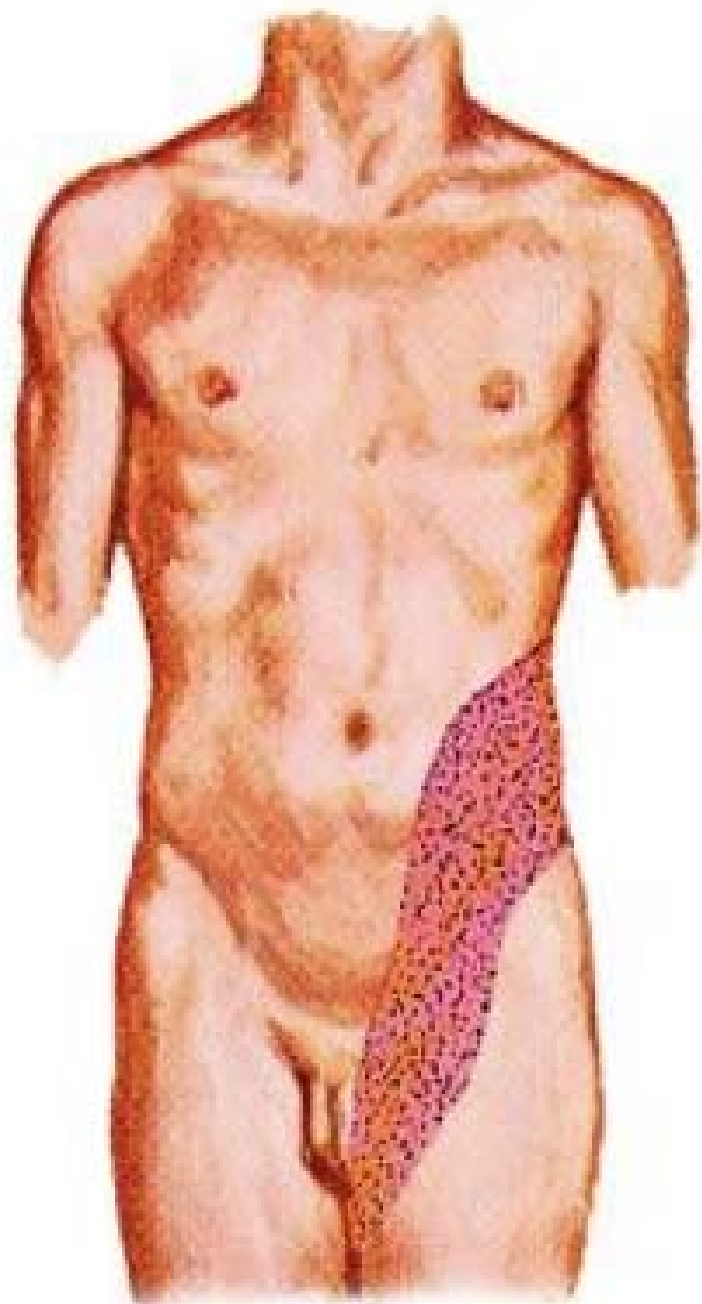
The severity and colicky nature of this pain are caused by the hyperperistalsis and spasm of this smooth muscles as it attempts to rid itself of a foreign body or to overcome obstruction.

The site of ureteral obstruction can be determined by location of referred pain :

Midureteric obst. Referred to McBurneys point on right side simulate acute appendicitis or lower abdomen on left side simulate diverticulitis.

Lower ureteric obst produce vesical irritation.

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GASTROINTESTINAL SYMPTOMS OF UROLOGIC DISEASES

Nausea and vomiting.

Abdominal distention .

A. RENOINTESTINAL REFLEXES.

They arise because of the common autonomic and sensory innervations of the two systems . Afferent stimuli from the renal capsule or musculature of the pelvis may, by reflex action, cause pylorospasm.

B. ORGAN RELATIONSHIPS

The right kidney is closely related to the hepatic flexure of the colon, the duodenum, the head of the pancreas, the common bile duct, the liver, and the gallbladder.

The left kidney lies just behind the splenic flexure of the colon and is closely related to the stomach, pancreas, and spleen.

C. PERITONEAL IRRITATION

The anterior surfaces of the kidneys are covered by peritoneum.

Renal inflammation, therefore, causes peritoneal irritation, which can lead to muscle rigidity and rebound tenderness.

Vesical Pain

agonizing pain in the suprapubic area.

The pain is usually not felt over the bladder but is referred to the distal urethra and is related to the act of urination.

Prostatic Pain

Acute prostatitis can cause a vague discomfort or fullness in the perineal or rectal area . occasionally referred as lumbosacral backache , but is not a common.

Prostatitis may cause dysuria, frequency, and urgency **+painful ejaculation.**

Testicular pain

very severe and is felt locally, there may be some radiation along the spermatic cord into the lower abdomen.

trauma, infection, or torsion of the spermatic cord .

Lower urinary tract symptoms(LUTS)

Storage(prevoid)	Voiding	Postvoiding
<i>Urgency</i>	<i>Hesitancy</i>	<i>Postvoid dribble</i>
<i>Frequency</i>	<i>Poor flow</i>	<i>Sense of incomplete emptying</i>
<i>Nocturia</i>	<i>Intermittency</i>	
<i>Urge incontinence</i>	<i>straining</i>	

Irritative symptoms:

Frequency:

- The normal adult voids 5- 6 times per day, with a volume of approximately 300 ml each void.
- Urinary frequency is due either to increases urinary output (polyuria) or decreased bladder capacity.
- Decreased capacity caused by: Increased sensation, decreased compliance, pressure from extrinsic source, or anxiety.

Dysuria

Painful urination is usually related to acute inflammation of the bladder, urethra, or prostate.

Nocturia:

- It is nocturnal frequency
- Normally adult arises no more than once at night to void.

Nocturia may be secondary to increased urine output or decreased bladder capacity.

URGENCY

A strong, sudden desire to urinate is caused by hyperactivity and irritability of the bladder, resulting from obstruction, inflammation, or neuropathic bladder disease.

loss of small amounts of urine may occur (urgency incontinence).

Enuresis:

- Bedwetting at night after the age of 3 years.**

• **Obstructive Symptoms**

Hesitancy:

Hesitancy is a delay initiating the urinary stream is one of the early symptoms of bladder outlet obstruction.

Prostate obstruction and urethral stricture are common causes of this symptom.

• **LOSS OF FORCE AND DECREASE OF CALIBER OF THE STREAM**

It is noted as urethral resistance increases despite the generation of increased interavesical pressure.

- **INTERRUPTION OF THE URINARY STREAM**

Interruption may be abrupt and accompanied by severe pain

- **SENSE OF RESIDUAL URINE**

The patient often feels that urine is still in the bladder even after urination has been completed.

ACUTE URINARY RETENTION

Sudden inability to urinate with agonizing suprapubic pain associated with severe urgency and may dribble only small amounts of urine.

CHRONIC URINARY RETENTION

It may cause little discomfort even though there is great hesitancy in starting the stream and marked reduction of its force and caliber.

Incontinence:

It is the involuntary loss of urine.

It can be subdivided into 4 categories:

1.True Incontinence: Involuntary loss of urine in all times and all positions.

The more obvious causes include

previous radical prostatectomy, exstrophy of the bladder, epispadias, vesicovaginal fistula, and ectopic ureteral orifice. Injury to the urethral smooth muscle sphincters. Congenital or acquired neurogenic disease.

STRESS INCONTINENCE

Sudden urine leakage in association with physical strain (eg, coughing, laughing, rising from a chair).

This is common in multiparous women who have weakened muscle support of the bladder neck and urethra and in men who have undergone radical prostatectomy.

URGE INCONTINENCE

Urgency may be so precipitate and severe that there is involuntary loss of urine.

. OVERFLOW INCONTINENCE

Paradox incontinence is loss of urine due to chronic urinary retention or secondary to a flaccid bladder.

The interavesical pressure finally equals the urethral resistance which leads to leakage of urine.

Hematuria:

Is the presence of blood in urine;

>3 RBCs per (HPF) is significant, and should never ignored.

H. In adult should be regarded as a symptom of malignancy until proved otherwise.

Gross or microscopic ?

Painful or painless ?

Timing of Hematuria:

- ***Initial H : arises from the anterior urethra.***
- ***Total H: from the bladder or the upper tracts.***
- ***Terminal H : usually secondary to inflammation in the bladder neck, the posterior urethra or the triagone..***

- ***Presence of clots:***
Usually indicates more severe degree of H. and probability of identifying significant urologic pathology increases.

Oliguria

Anuria

Pneumaturia

The passage of gas in the urine strongly suggests a fistula between the urinary tract and the bowel.

Congenital anomalies account for most urethroenteric fistulas.

Certain bacteria, by the process of fermentation, may liberate gas on rare occasions

EXAMINATION OF URINE (urinalysis)

Urinalysis is one of the most important and useful urologic tests available, yet all too often the necessary details are neglected and significant information is overlooked or misinterpreted.

METHOD OF COLLECTION

1. Male patients: It is usually simple to collect a clean-voided midstream urine sample.

Men with chronic UTI : 4 samples tests(VB1, VB2, EPS, VB3)

2. Females: more difficult to obtain: (clean the vulva and separate the labia, and collect MSU.

The use of catheter.

3. Neonate and infants:

The use of plastic bags with adhesive collar.

Macroscopic Examination

A. COLOR & APPEARANCE

Urine is normally yellow (umber) color

drugs: phenazopyridine(Pyridium) will turn the urine orange; rifampin will turn it yellow orange

Metronidazole will turn it reddish-brown.

Nitrofurantoin will turn it brown

Red urine does not always signify hematuria.

A red discoloration after beet ingestion,

myoglobinuria due to significant muscle trauma, or hemoglobinuria following hemolysis ;

B. Turbidity

Cloudy urine due to phosphaturia or pyuria .

SPECIFIC GRAVITY

The specific gravity of urine (normal, 1.003–1.030)

patients with significant intracranial trauma may be low owing to a lack of antidiuretic hormone ;

primary diabetes insipidus is <1.010 even after overnight dehydration;

patients with extensive acute renal tubular damage is consistently 1.010

CHEMICAL TESTS

1.The pH of urine .

Patients with uric acid stones rarely have a urinary pH over 6.5 (uric acid is soluble in alkaline urine).

Urinary tract infections caused by urea-splitting organisms (most commonly *Proteus* species), the urinary pH tends to be over 7.0.

3. Protein

Persistently elevated protein levels in the urine (>150 mg/24 h) may indicate significant disease.

Dip-strips containing bromphenol blue can be used to determine the presence of >10 mg/dL protein in urine.

4. Glucose: glucose oxidase-peroxidase tests used in dip-strips are quite accurate and specific for urinary glucose.

5. Bacteria and leukocytes

Test strips to determine the number of bacteria (nitrite) or leukocytes (leukocyte esterase) as predictors of bacteriuria are as accurate as microscopic sediment analysis.

6. Ketones, 6. urobilinogen and bilirubin

Microscopic Examination

1. Bacteria: detecting a several bacteria per HPF in a properly collected midstream urine in a man or suprapubic or catheter sample in weman a diagnosis of UTI can be made.
2. Leukocytes: a finding of more than 5 leukocytes per high-power field is generally considered abnormal (pyuria). If the patient has symptoms of a urinary tract infection as well as pyuria and bacteriuria, one is justified in making a diagnosis of infection and initiating empiric therapy.

Renal tuberculosis can cause “sterile” acid-pyuria and should be considered in any patient with persistent pyuria and negative results on routine bacterial cultures.

3. Erythrocytes:

The presence of even a few erythrocytes in the urine (hematuria) is abnormal and requires further investigation

4. Epithelial cells—**Squamous epithelial cells in the urinary sediment** indicate contamination of the specimen no other significance should be placed on them. however, if they are present in large numbers or clumps and are abnormal histologically they are indicative of a malignant process affecting the urothelium.

5. Casts

Casts are formed in the distal tubules and collecting ducts and, are not seen in normal urinary sediment; therefore, they commonly signify intrinsic renal disease.

6. crystals: The finding of crystals in urine can be helpful in some instances, but the mere presence of crystals does not indicate disease

Normal values are as follows:

Color – Yellow (light/pale to dark/deep amber)

Clarity/turbidity – Clear

pH – 4.5-8

Specific gravity – 1.005-1.025

Glucose - ≤ 130 mg/d

Ketones – None

Nitrites – Negative

Leukocyte esterase – Negative

Bilirubin – Negative

Urobilirubin – Small amount (0.5-1 mg/dL)

Blood - ≤ 3 RBCs

Protein - ≤ 150 mg/d

RBCs - ≤ 2 RBCs/hpf

WBCs - $\leq 2-5$ WBCs/hpf

Squamous epithelial cells - $\leq 15-20$ squamous epithelial cells/hpf

Casts – 0-5 hyaline casts/lpf

Crystals – Occasionally

Bacteria – None

Yeast - None