

UROLITHIASIS - CLINICAL FEATURES AND DIAGNOSIS

R. C. M. KAZA

Department of Surgery, Maulana Azad Medical College &
Associated Lok Nayak & G.B. Pant, Hospital, New Delhi- 110002, India

Abstract : Urinary tract stone disease has been an important part of the human disease for millennia. Pain, infection, or hematuria are classical triad of symptoms reported by patients with renal stone disease. While acute obstruction may produce a classic renal colic, long standing obstruction may be asymptomatic and may present with symptoms of renal failure; costovertebral angle tenderness is common; this pain can move to the upper or lower abdominal quadrant as a ureteral stone migrates distally. Peritoneal signs are usually absent—an important consideration in distinguishing renal colic from other sources of flank or abdominal pain. A detailed radiological investigation and metabolic profile are essential for the diagnosis for renal stone disease.

Urinary tract stone disease has been a part of the human condition for millennia; in fact, bladder and kidney stones have even been found in Egyptian mummies. Some of the earliest recorded medical texts and figures depict the treatment of urinary tract stone disease. The overall lifetime rate of kidney stones in the general population is approximately 12% for men and 4% for women. Having a family member with a history of stones doubles these rates. Approximately 30 million people are at risk in the United States. No such data available for the Indian population. Peak incidence occurs in people aged 35-45 years, but the disease can affect anyone at any age.

HISTORY

- Patients with urinary calculi may report *pain, infection, or hematuria*. Small nonobstructing stones in the kidneys only occasionally cause symptoms. If present, symptoms are usually moderate and easily controlled.
- The passage of stones into the ureter with subsequent acute obstruction, proximal urinary tract dilation, and spasm is associated with classic renal colic.
 - Renal colic is characterized by undulating cramps and severe pain and is often associated with nausea and vomiting.
 - As the stone travels through the ureter, the pain moves from the flank to the upper abdomen, then to the lower abdomen, down to the groin, and eventually to the scrotal or labial areas.
 - Associated bladder irritative symptoms are common when the stone is located in the distal or intramural ureter.
- Patients with large renal stones known as staghorn calculi are often relatively asymptomatic.
 - Staghorn refers to the presence of a branched kidney stone occupying the renal pelvis and at least one calyceal system. Such calculi usually manifest as infection and hematuria rather than as acute pain.
 - Asymptomatic bilateral obstruction, which is uncommon, manifests as symptoms of renal failure.
- Important historical features are as follows:
 - Duration, characteristics, and location of pain

- History of urinary calculi
- Prior complications related to stone manipulation
- Urinary tract infections
- Loss of renal function
- Family history of calculi
- Solitary or transplanted kidney

A few important words about the pathophysiology of renal colic.

RENAL COLIC PAIN

The colicky-type pain known as renal colic usually begins in the upper lateral mid back over the costovertebral angle and occasionally subcostally. It radiates inferiorly and anteriorly toward the groin. The pain generated by renal colic is primarily caused by the dilatation, stretching, and spasm caused by the acute ureteral obstruction. (When a severe but chronic obstruction develops, as in some types of cancer, it is usually painless.)

Colic is a misnomer because renal colic pain tends to remain constant, whereas intestinal or biliary colic is usually somewhat intermittent and often comes in waves. The pattern of the pain depends on the individual's pain threshold and perception and on the speed and degree of the changes in hydrostatic pressure within the proximal ureter and renal pelvis. Ureteral peristalsis, stone migration, and tilting or twisting of the stone with subsequent intermittent obstructions may cause exacerbation or renewal of the renal colic pain. The severity of the pain depends on the degree and site of the obstruction, not on the size of the stone. A patient can often point to the site of maximum tenderness, which is likely to be the site of the ureteral obstruction. A stone moving down the ureter and causing only intermittent obstruction actually may be more painful than a stone that is motionless. A constant obstruction, even if high grade, allows for various autoregulatory mechanisms and reflexes, interstitial renal edema, and pyelolymphatic and pyelovenous backflow to help diminish the renal pelvic hydrostatic pressure, which gradually helps reduce the pain. The interstitial renal edema produced, stretches the renal capsule, enlarges the kidney (ie, nephromegaly), and increases renal lymphatic drainage. (Increased capillary permeability facilitates this edema.) It may also reduce the radiographic density of the affected kidney's parenchyma when viewed on a noncontrast CT scan. Distension of the renal pelvis initially stimulates ureteral hyperperistalsis, but this diminishes after 24 hours, as does renal blood flow. Peak hydrostatic renal pelvis pressure is attained within