



# *"It's worse than labour pains!"*

Greg Trottier, PhD, MD; and Sam G. Campbell, MB BCh, CCFP(EM)

## Questions & Answers

### Patient presentation

- Patient is a 42-year-old woman.
- Presents with a three-hour history of sudden onset of excruciating, left-sided abdominal pain.
- Pain extends to her left groin.
- On exam, she can't attain a comfortable position.
- She has a tender left flank.
- There are no peritoneal signs.
- She is afebrile and tachycardic.
- Urinalysis is positive for hematuria.



Unenhanced helical computed tomography scan showing a large stone obstructing the proximal left ureter.

### **1.** *What are the typical symptoms of renal colic?*

Patients with renal colic typically present with unilateral colicky flank pain that radiates to the groin. They may have pain and tenderness in the flank only or feel pain in the costovertebral angle, the lower quadrant of the abdomen and/or down into the groin, depending on the location of the stone.

The painful periods may be intermittent, corresponding to ureteral peristalsis and renal capsular distention. A stone approaching the ureteral-vesicular junction may manifest as irritative voiding symptoms.

Renal colic can also be associated with nausea and vomiting. Most patients will have some degree of hematuria.

### **2.** *What should be ruled out when renal colic is considered?*

Forty per cent of missed abdominal aortic aneurysms are misdiagnosed as renal colic. Delayed diagnosis of an abdominal aortic aneurysm can be fatal. An abdominal computed tomography (CT) scan or ultrasound are effective in differentiating these diagnoses.

Fever, an increased white blood cell count and pyuria in combination with renal colic suggest an upper urinary tract infection. Urosepsis is a major concern and should be entertained, especially if the patient has signs of hemodynamic instability. A combination of infection and renal colic are grounds for immediate urologic referral, in addition to basic resuscitative efforts. Broad spectrum intravenous antibiotics, such as ampicillin and gentamicin, should be started at once.

### **3.** *What investigations should be ordered?*

The best imaging study to confirm renal colic secondary to calculi is an unenhanced helical CT scan (UHCT) of the abdomen and pelvis. This test has the advantage of detecting radiolucent stones and provides information about the degree of obstruction.

Although UHCT exposes the patient to twice the radiation of intravenous urography (IVU) (the previous gold standard imaging modality), the costs are similar with the advantage of speed and lack of contrast exposure. Furthermore, UHCT can detect other abdominal pathologies, such as abdominal aortic aneurysms, appendicitis and diverticulitis.

Ultrasound is particularly useful in pregnant women, where radiation is a concern, and can provide information about hydronephrosis and hydroureter.



An intravenous pyelogram (IVP) at 30 minutes, demonstrating a nephrogram on the left with blunted calyces.



IVP at two hours showing a proximal ureteric obstruction.

### Back to our patient...

- The patient's symptoms are not controlled with non-steroidal anti-inflammatory drugs.
- Only moderate relief is gained from intravenous narcotics.
- An unenhanced helical computed tomography scan reveals a 6 mm, upper left ureteric stone with a dilated collecting system.
- Urology is consulted and the patient undergoes immediate extracorporeal shockwave lithotripsy with ureteric stent insertion.

Standard laboratory investigations include:

- creatinine
- blood urea nitrogen,
- complete blood count,
- urinalysis and
- possible urine cultures to determine kidney function and the potential for an infective process.

### 4. What is the best empiric treatment?

Non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, indomethacin or ketorolac, are appropriate initial medications for relieving colic symptoms.

Frequently, NSAIDs are insufficient to control pain and parenteral narcotic analgesics are necessary. The choice of narcotic is a personal preference. A trial of oral narcotics may help determine if a patient can be managed as an outpatient.

Because ketorolac is available in an intravenous form, it has a rapid effect and is useful in patients who are vomiting.

### 5. What sort of followup is appropriate?

Patients who have intractable pain, uncontrolled vomiting, deteriorating renal function, a high-grade obstruction, a solitary kidney or an infected upper urinary tract should have an immediate urology consult.

Patients whose pain is managed with NSAIDs and/or narcotics and who do not display any of the above complications should be discharged with instructions to strain their urine for stone passage. Oral NSAIDs may decrease subsequent attacks in the days following discharge and may be used even in the absence of pain.

Followup for stone composition analysis and further investigations can be done on an outpatient basis. Stones < 5 mm in diameter are likely to pass spontaneously within four weeks of symptoms. The likelihood of stone passage declines with an increase in stone size and a stone which has not passed in two months is unlikely to pass spontaneously. **Dr.**

**Dr. Trottier** has a doctorate in renal physiology and is a urology resident, Dalhousie University, Halifax Nova Scotia.

**Dr. Campbell** is an assistant professor of emergency medicine, Dalhousie University, and an ED physician, Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia.

*This department covers selected points to avoid pitfalls and improve patient care by family physicians in the ED. Submissions and feedback can be sent to [diagnosis@sta.ca](mailto:diagnosis@sta.ca).*