BCEM Sample Case #1 – Abdominal pain, High-grade Ureteral Obstruction vs. Renal Vein Thrombosis

Patient: #1
Date of ED Service: 02/14/1998 **Age:** 15 year-old male
Admitting Complaint: Abdominal pain
Discharge Diagnosis: Abdominal pain, high-grade ureteral obstruction vs. renal vein thrombosis

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HISTORY

Patient is a 15 year-old Native American teenager who arrives at the Emergency Department at 2:54 A.M. with his parents via private automobile. Approximately 30 minutes prior to admission, the patient was awakened by severe pain in his left, lower abdomen. It radiates to his left thigh. He feels better when he curls up in a ball. The pain was worse driving over bumps while riding in the automobile on the way to the Emergency Department. He feels like he has to have a bowel movement. His last bowel movement was two days ago and was normal. There is no pain in his scrotum. He denies history of similar pain and the pain is currently severe. He denies anorexia, unusual thirst, nausea, vomiting, diarrhea, flank pain, painful or difficult urination, increased urinary frequency, fever, chills, cough, rhinorrhea, and sore throat. He takes no medication and has no history of abdominal or genitourinary problems. He attends high school and lives with his parents in Fruitland.

PHYSICAL EXAMINATION

- General: Obese, uncomfortable-appearing Native American teenager lying still on a gurney.
- Vital: Temperature 98.6°F, Pulse 86/ minute, Blood pressure 160/78 mmHg, Respiration 20/min.
- HEENT: Pupils equal, round, and reactive to light. Oropharynx is moist and without
- erythema. Neck is supple without adenopathy. Tympanic membranes normal.

- Heart: Regular rate and rhythm with murmurs, gallops, or rubs.

- Lungs: Clear to auscultation, without accessory muscle use.

- Trunk: No costovertebral angle tenderness. Thoracic and lumbar spine non-tender to percussion. No spasm of paraspinous musculature.

- Abdomen: Normoactive bowel sounds, soft, mild tenderness in the left, lower abdomen without guarding or rebound. No masses palpable. Negative bed shake and heel tap. Negative psoas and internal obturator signs.

- Groin: Mild tenderness of left inguinal area. No bulge in either inguinal canal in either lying or standing position with cough.

- Genital: Penis uncircumcised, glands normal, urethral meatus normal. Testicles are normal size, hang vertically in scrotum without elevation, and non-tender. Epididymis is posterior and non-tender. Scrotum without edema or erythema.

- Rectal: Normal sphinder tone. Prostate firm and non-tender. No perirectal tenderness or masses. No urethral discharge with prostate massage. Small amount of brown guaiac negative stool present.

- Skin: Warm and dry without rash.

- Psychiatric: Alert and oriented. Affect normal.

INITIAL IMPRESSION

- Severe abdominal pain out of proportion to abdominal examination

- Rule-out ureterolithiasis

- Rule-out testicular torsion

- Rule-out volvulus

- Rule-out cystidis

- Rule-out renal vein thrombosis, unlikely without dehydration, hypercoagulability, or evidence of nephritic syndrome.

- Rule-out mesenteric ischemia, unlikely without vascular disease, hypercoagulability, or artificial heart valves.

- Rule-out diverticulitis, unlikely in this age group

- No evidence of prostatitis

LABORATORY

- Complete blood count: White blood cell count of 11,400/mm³ with neutrophils 60%, lymphocytes 30%, and monocytes 7%.
- Flat x-ray of abdomen: Normal
- Urinalysis: Yellow, hazy, specific gravity 1.015, pH 7, glucose negative, ketone negative, protein negative, blood 4+, white blood cell 0-2 per high field, red blood cell 50-100 per high-power field.
- Intravenous pyelogram: Right system normal. Left kidney shows immediate uptake of dye, but no flow. Left kidney slightly larger than right. No left ureteral flow seen after several hours.

CLINICAL COURSE

After hematuria was documented, patient was treated with two liters of intravenous saline 0.9%. Intravenous promethazine 25 mg was given and meperidine was titrated to pain. Emesis occurred despite the promethazine dose, but resolved after intravenous lorazepam 1 mg was administered. Serial abdominal examinations were performed without any change noted. An intravenous pyelogram was performed with results as above. His case was discussed with the urologist on-call and the patient was admitted to his service for Doppler ultrasound of his kidneys and further management.

FINAL IMPRESSION

- Abdominal pain
- Hematuria
- High-grade proximal ureteral obstruction versus real vein thrombosis, left side

CASE DISSCUSSION

The correct interpretation of acute abdominal pain can be challenging, yet it is essential. Failure to diagnose an urgent or emergent condition may lead to catastrophic results.

With this patient's short 30-minute history of pain, it is difficult to characterize if the pain may be colicky or intermittent. Such intermittent pain would be typical of an obstructed hollow

viscous. Severe abdominal pain, with only mild tenderness and no guarding, implies a visceral source without somatic irritation. Infectious disease like diverticulitis and appendicitis will appendicitis will eventually produce peritoneal somatic irritation, but that may not be present during the first hour of symptoms. Left-sided appendicitis can occur, yet it is exceedingly rare for such anatomic variation to occur. The produce of appendicitis is visceral rather than somatic, though it is often mild during the prodrome phase that typically lasts 4 to 6 hours.

Testicular torsion is a true emergency requiring immediate treatment to salvage a viable testis. It may be sudden, severe, and be felt in the lower abdomen. It may take a few hours for testicular edema, scrotal edema, and scrotal erythema to occur.

After the patient's urinalysis demonstrated microscopic hematuria, the genitourinary system was implicated a likely source for this patient's pain. A supine x-ray of the abdomen was initially ordered to rule-out fecal impaction or evidence of bowel obstruction. Additional, ureteral calcifications are sometimes visible on a plain x-ray, and calcifications within the cortex and pelvis of the kidney is typically visible. This film was normal and an intravenous pyelogram was ordered. It showed rapid uptake in both kidneys demonstrating the patency of the arterial supply. However, the lack of any flow over 2 hours in the left ureter suggested either a very high-grade obstruction or a thrombosis of the left renal vein. Though the patient did not have any risk factors for renal vein thrombosis, a Doppler ultrasound was ordered to evaluate the renal vein.

The patient's case discussed with the urologist on-call. He agrees to admit the patient. The renal ultrasound was ordered to be performed as an inpatient.

FOLLOW UP AFTER DISHCHARGE

The ultrasound showed normal arterial and venous flow to both kidneys. A supine abdominal x-ray at 12 hours post contrast injection showed a 2-3 mm calcification in the left mid-ureter and the start of some ureteral flow.

Applicant's Signature: _____