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/mm^3 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 DISCUSSION

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: _____

BCEM Sample Case #2 – Nephrolithiasis

Patient: #2
Date of ED Service: 8/13/1998 **Age:** 24
Admitting Complaint: Chills and Back Pain
Discharge Diagnosis: Nephrolithiasis

IDENTIFYING DATE

This is a 24 year-old male.

CHIEF COMPLAINT

Chills and back pain.

HISTORY OF THE PRESENT ILLNESS

This 24 year-old male is an out-of-town visitor from Madrid, Spain. He was seen in this Emergency Department approximately 36 hours prior to admission, at that time complaining of Dysuria. A urinalysis was performed at that time and was unremarkable, and following a Negative physical examination with nothing further found, the diagnosis of nonspecific urethritis was made and the patient was treated with 1 gram of azithromycin p.o. and discharged.

The patient states that the pain initially subsided. However, late this afternoon he developed left-sided costovertebral angle and flank pain, associated with nausea and vomiting. The patient was unsure as to the development of fever, but he did have chills and sweats. At this time he denies dysuria and complains predominantly of pain to the posterior back and flank. He states that there is some radiation of pain anteriorly. However, he does not localize that pain well. He denies hematuria or penile discharge. He states he still has some pain, which he experiences right at the tip of his penis. He states that there was no blood in his vomitus. He denies history of alcohol intake or of peptic ulcer disease. He states that his diet has been changes as a result of his travels, but he denies diarrhea or abdominal pain.

PAST MEDICAL HISTORY

Positive only for left shoulder surgery approximately six years prior to admission.

REVIEW OF SYSTEMS

Entirely negative otherwise.

PERSONAL & SOCIAL HISTORY

The patient lives in Madrid. He is a student. He is traveling with his family, who are here on business.

PHYSICAL EXAMINATION

- VITAL SIGNS: The patient is afebrile with a temperature of 98.5. His blood pressure is 132/82. His pulse is 93 and the respiratory rate is 20.
- SKIN: Color is good. The skin is dry; there is no diaphoresis at this time.
- BACK: Positive CVA tenderness on the left, both to punch and even to palpation.
- ABDOMEN: Scattered bowel sounds, but is otherwise soft and non-tender. There is no hepatosplenomegaly, rebound or guarding. No masses.
- GENITALIA: Normal uncircumcised male, without penile lesions. The testes are bilaterally descended and non-tender. There is no blood seen at the meatus, and there is no urethral discharge noted.

LABORATORY

WBC count is 11.1, HGB 15.3, HCT 45.9. Chemistries revealed sodium of 138, potassium 3.5, chloride 95, CO2 28, BUN 22, creatinine 1.6, glucose 144. The urine was reported by the nurse who accepted the specimen from the patient as being very cloudy and foul-smelling. However, the results subsequently returned from the lab as showing a negative dipstick, including negative for nitrates and leukocyte esterase and blood, pH of 8.0 with a specific gravity of 1.015. The microscopic examination was negative for WBC's but did show 0-2 RBC's per high powered field, and 4+ amorphous urates.

EMERGENCY DEPARTMENT COURSE

The patient was initially ambulatory into the Emergency Department complaining of pain, but did not appear to be in acute distress. Subsequently, however, he did develop more pain along with pallor and diaphoresis. At that point she was medicated with Demerol, a total of 50 mg. IV push and droperidol 2.5 mg. IV push, with good results. Given the setting of recent dysuria, chills and sweats, CVA tenderness, foul-smelling and cloudy urine, a presumptive diagnosis of pyelonephritis was made. The patient was treated with 1 gm. Of ceftriaxone IV piggyback. This was done despite the rarity of pyelonephritis in young males without known GU anomalics or indwelling catheters.

Subsequently, the peripheral WBC returned as normal, and the UA results as above. At that point, the chem.-7 was added on in preparation for a further study. When the BUN and creatinine returned, an intravenous pyelogram was obtained.

The patient had informed consent and was injected with 75 cc's of nonionic contrast material by me, after a scout film was obtained. He tolerated the procedure well. Findings (as read by me) included a normal uptake of dye with appropriate spillage into the collecting system in the right. However, the patient was in the Emergency Department for 4-5 hours until the dye first manifested in the renal pelvis on the left, with only a nephrogram having been observed initially. In the ensuing several hours, the patient subsequently developed a dye column, which clearly revealed a high grade obstruction at the ureterovesicualr junction on the left, with approximately a 4.5 to 5.0 mm. Radiopaque density, felt to probably be a stone, noted to be obstructing flow.

The patient required subsequent re medication for pain, and was given additional IV push droperidol and Dilaudid 1 mg. with good symptomatic relief.

Because of the high-grade obstruction, and the fact that the patient was from out-of-town and would not be able to undergo follow-up in a timely fashion with his own physician-and because this was the second EF visit for this problem-it was felt prudent to obtain urology consultation in the Emergency Department.

Dr. X, the panel urologist, kindly consulted to the Emergency Department, evaluated the patient and concurred with the diagnosis and treatment rendered until then. He felt this was a "passable" stone. Accordingly, the patient is discharged at his direction.

ASSESSMENT

Ureteral colic, nephrolithiasis, and high-grade obstruction, left kidney.

PLAN

The patient has been a dispensed urine strainer. He has been given a prescription for analgesics by Dr. Q. A follow-up appointment has been made for him in Dr. V's office on Monday 8/10/98 at 2 P.M. He has been advised to push fluids, strain his urine, and take the analgesics PRN. He is further advised to return to the ED or to contact Dr. V sooner should he develop a fever, intractable pain or vomiting.

CASE DISCUSSION

This case illustrates several issues, the first being the necessary observation that not all dysuria in a young male should lead one to the diagnosis of an STD. The second is the illustration of how

something so common-amorphous urates-can lead one to jump to the conclusion that the "cloudy urine" represents an infection in the urinary tract (albeit there is the possibility of an infection behind an obstructing stone). Once the minimal cellular findings on the urinalysis returned, however, (0-2 RBC's), the proper diagnostic procedure was performed and the diagnosis was established. Interestingly, the lab in our hospital reports out a creatinine of >1.5 as being abnormally high, probably a reflection of the elderly population we generally admit. The x-ray technician initially was reluctant to do the IVP because of the "high" creatinine of 1.6 in this patient, who was in actuality a normal young man with a large muscle mass.

Applicant's Signature: _____