Flank Pain and Fever in a 30 Year Old Female

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CHIEF COMPLAINT
Fever, bilateral flank pain

HISTORY OF PRESENT ILLNESS
- 30 year old female nurse with no past medical history presents with fever (Tmax 105.5 degrees F) and mild bilateral flank pain without dysuria or hematuria.
- The patient has no history of nephrolithiasis.
- She also notes a pruritic erythematous rash starting in her chest and moving peripherally over 3 days.
- Two days ago she underwent an incision and drainage of a Bartholin cyst abscess and finished a course of levofloxacin and trimethoprim-sulfamethazole prior to the procedure.
- Patient also complains of progressively worsening dyspnea for 1 day. No cough, chest pain, or pleurisy.
- No history of DVT, PE, major surgery, immobilization, smoking, hemoptysis, or malignancy.

IMAGES

VITALS: Pulse 119, RR 20, 109/66, 100% on room air. BMI 24.3
- General:
  - Mild distress, well-groomed
- CV:
  - Tachycardic, regular rhythm, no m/r/g. No edema. 2+ radial b/p.
- Resp:
  - CTA bilaterally, BS equal
- Neck:
  - No JVD, trachea midline
- Back:
  - No CVAT b/p
- GU:
  - 2 cm incision to lower left labia, no erythema, fluctuance, or drainage
- Neuro:
  - Moving all four extremities, A&Ox4, normal speech
- Skin:
  - Erythematous maculopapular rash on arms and chest, slightly blanchable

CASE DISCUSSION
- This patient with no past medical history or risk factors for pulmonary embolus presented with a constellation of symptoms commonly associated with sepsis.
- In this case, the likely source of infection was initially thought to be the urinary tract. However, flank pain can be an uncommon presentation of pulmonary embolus.
- Case reports reveal PE discovered in patients receiving CT stone series, which uncovered pulmonary abnormalities.
- Additionally, Mature Onset Diabetes of the Young (MODY) can manifest in adult patients and possibly result in DKA.
- Infection is a leading trigger of DKA, and given this patient's recent abscess, may have been the precipitating event for this cascade of pathology.
- Additionally, diabetes results in decreased protein C and protein S, in addition to increased von Willebrand Factor. The end result is a hypercoagulable state in these patients.
- Hypertonicity and volume depletion completes Virchow's Triad, setting the stage for PE/DVT.

ED COURSE
- Given the patient's fever, tachycardia, and recent infection, a septic workup was initiated.
- Diphenhydramine, methylprednisolone, and tamoxifen were given for the rash, which was thought to be drug-induced. This provided some relief.
- The first studies to result were the urinalysis and BMP, which revealed a glucose of 538 mg/dl and urine glucose of 500 mg/dl.
- As such, a DKA workup revealed serum ketones, pH of 7.1, and anion gap of 26. Urinalysis, chest x-ray, and CBC revealed no signs of infection.
- After correcting the anion gap and initiating an insulin infusion, the patient's symptoms did not abate. Given her persistent tachypnea, which were initially thought to be Kussmaul respirations, a D-Dimer was ordered.
- After resulting at 550 ng/mL, a CTA of the chest revealed multiple bilateral pulmonary emboli with signs of mild right heart strain.
- Patient was placed on heparin and admitted to the ICU.

CLINICAL PEARLS
- Consider pulmonary embolism as a cause for flank pain in a patient with dyspnea, tachypnea, or hypoxia.
- DKA can occur in adult patients with undiagnosed MODY and no previous diabetic history.
- Infection is a common trigger of DKA.
- Be wary of PE/DVT in patients with DKA.
- Confounders, such as the rash and recent infection in this patient, can complicate the diagnostic picture in an undifferentiated patient. Maintain a broad differential diagnosis in these cases.