Integrative Pediatrics and Child Care

Massive Pulmonary Bleed from Undiagnosed Hepatitis C Infection

Rudy John Kink* and W. Ricks Hanna

The University of Tennessee Health Science Center, United States

*Correspondence: Rudy John Kink, Pediatric Emergency & Sedation Specialists, 50 North Dunlap Memphis TN 38103, USA, Email: rudykink@hotmail.com

Received: Jan 10, 2018; Accepted: Jan 31, 2018; Published: Feb 02, 2018

Abstract

A 14 year-old previously healthy female patient presented with back pain, halitosis, and hemoccult positive stool. She was ultimately diagnosed with Takayasu’s Vasculitis and thrombo-angiitis vasculitis as well as a post-mortem diagnosis of Hepatitis C. The two vasculitides created a pulmonary arterial-esophageal fistula with a necrotic area and a ruptured pulmonary artery, which led to the patient’s death. Further discussion with the family indicated that they were unaware of the patient’s Hepatitis C status and they denied any risk factors the patient may have had that lead to Hepatitis C infection. Obtaining a history in pediatric patients is often limited by what the family knows and discloses, but when a patient presents with elevated inflammatory markers, halitosis, and hemoccult-positive stool, an esophageal fistula should be considered in one’s differential diagnosis.

Case Report

A 14 year-old previously healthy female presented to the emergency department (ED) with a four week history of upper respiratory infection symptoms, upper back pain, halitosis, and occasional non-bilious, non-bloody vomiting. Two weeks prior to admission, she was seen in the ED with back pain. She was given ibuprofen and discharged with a diagnosis of back pain after her pain had improved. No images were obtained at her initial visit to the emergency department. Because her symptoms continued, she followed up with her primary care physician, and was referred to the ED for further evaluation. The patient reported that she was taking ibuprofen and acetaminophen for pain, as well as having her brother walk on her back for relief. She denied any recent travel or sexual activity.

Physical exam revealed the patient to be cooperative and in no acute distress. She weighed 102.1 kg with height of 157 cm, and her temperature was 38.4 C and her oxygenation saturation was 99% on room air. Her oropharynx was normal without exudate or erythema, and no bleeding was visualized. She was tachycardic, with a heart rate of 114 beats per minute, blood pressure was 117/62, and respiratory rate was 32. Although she was tachypneic, her lungs were clear to auscultation, with no wheezing, rales or rhonchi being noted. On abdominal exam, she had mild right upper quadrant tenderness but no other findings. She had tenderness to palpation of T8-T10 on spinal exam, with no step-off or swelling noted.

Laboratory findings revealed the patient had a normocytic anemia (hemoglobin level 9.4 g/dL, hematocrit 28.5 g/dL), white blood cell count of 10.2 g/dL and platelets of 466. CRP and ESR were 292.8 and 102 respectively LDH was 698. Electrolytes and urinalysis were normal, but her liver enzymes were elevated with AST 65 and ALT 61.

In the ED, the patient was given ketorolac for pain as well as IV fluids. She reported a decrease in her pain, and her vital signs improved to a heart rate of 104 and a respiratory rate of 26 with an oxygen saturation of 98% on
After admitted to the floor, the patient was found to have hemocult-positive stool. The initial chest radiograph and kidney-urinary-bladder radiograph (KUB) were reviewed with the staff radiologist and the resident floor team. The findings were interpreted as right middle lobe atelectasis and right paratracheal and right hilar prominence with small calcific granulomas, most likely representing adenopathy. The KUB was unremarkable.

After this initial workup, the patient was scheduled for an upper gastrointestinal series for further evaluation of the halitosis and hemocult-positive stool. Molecular pneumonia diagnostics were performed and she was negative for all of the following by PCR: atypical pneumonia, Chlamydia, Legionella pneumonia, and Mycoplasma pneumonia. During hospital day one, her pain improved, and she was in no acute distress. The next day, the patient developed acute hemoptysis with bleeding from her nose and mouth, and she became asystolic. The code team was called, and chest compressions were initiated along with bag valve mask ventilation. She was endotracheally intubated and given a normal saline bolus with no reported blood visualized from her airway. During the resuscitation, 400 mL of blood was suctioned from her oropharynx. Epinephrine was given every 3 minutes per PALS guidelines, calcium chloride was given, and multiple bicarbonate doses were given as well as 2 units of packed red blood cells during the 50 minutes of resuscitation. She was pronounced dead at 12:09 pm.

Given the uncertainty of the patient's death, an autopsy was performed. Post-mortem single view abdomen revealed mild gaseous distention of the small bowel and proximal colon, portal venous gas, small left basilar pneumothorax, and opacification of the right lung base. Post-mortem chest radiograph showed a near total opacification of the right hemithorax, small left pneumothorax and pneumomediastinum. Immunochemistry showed that Hepatitis B surface antigen was negative, HIV-1,2 antibody was negative but Hepatitis C antibody was positive. Autopsy further revealed an encapsulated cavity (4x4x7 cm) with necrotic contents (2x2, 4x4 cm) located below the right side of the 6th thoracic vertebral body and the right lower pulmonary artery, vein, and bronchus. A fistula had developed between this cavity and the anterior wall of the esophagus. The patient had pulmonary hemorrhage with small inflammatory infiltrates in the right lower lobe and the right upper lobe and demonstrated edema, congestion, and hemorrhage with a hemorrhagic cavity (1x1x1.8 cm). She had parenchymal hemorrhage and edema in the right middle and left upper lobes of the lung. The liver and gastrointestinal tracts had small amounts of hemorrhage, but were otherwise normal. In addition, the patient had a pericardial effusion totaling 45 mL. Finally, microscopically, the autopsy showed multiple areas of arthritis present in the pulmonary and systemic arteries consistent with Takayasu's arthritis and thrombo-angiitis obliterans with concurrent Hepatitis C infection. The cause of death, determined by autopsy, was massive hemoptysis secondary to rupture of an inflamed section of the right lower segmental pulmonary artery.

**Discussion**

We present the case of an overweight teenage female with the chief complaint of back pain for one month. In the pediatric population, back pain is commonly due to a musculoskeletal etiology and resolves with the use of non-steroidal anti-inflammatory drugs (NSAIDs) and rest. Our patient’s case differed in that she presented with low-grade fever and elevated inflammatory markers. The mother and patient were never questioned about any infectious diseases such as Hepatitis C, and a follow-up care conference with the family reported that the mother did not know her daughter had Hepatitis C.

This patient had back pain, low-grade fever, and halitosis. In a well appearing patient, the differential diagnosis for back pain, fever, and halitosis would include musculoskeletal pain, pneumonia, gastroesophageal reflux, histoplasmosis, pericarditis, viral infection, viral pharyngitis, streptococcus pharyngitis, sinusitis, post nasal drip (allergic rhinitis) as well as poor dental hygiene, since food particles can become trapped in the crypts of the tonsils creating halitosis. Typically, none of these diagnoses would cause the inflammatory markers to be significantly elevated.

The back pain was likely secondary to the necrotic cavity discovered post-mortem, and the halitosis was secondary to the esophageal fistula that formed to this cavity. An extensive literature review was performed, and this is the first documented pediatric case of both Takayasu's Vasculitis and thrombo-angiitis obliterans secondary to Hepatitis C infection. In the literature, Hepatitis C infection can cause vasculitis in the adult population by forming
immunocomplexes [1-6]. Vasculitis can essentially affect a single or multiple organs [5, 7, 8]. Vasculitis, like Takayasu autoimmune arteritis and thrombo-angiitis, can cause aneurysms as well as necrosis of the arteries. If left untreated, these aneurysms can lead to rupture and ultimately death, as seen in this patient. Takayasu autoimmune arteritis (large-size arterial vasculitis) can affect the pulmonary arteries in patients and create an aneurysm in these arteries, though this is usually seen in middle-aged females [9]. Thrombo-angiitis obliterans (medium-size arterial vasculitis), however, typically affects the limb arteries and veins in young males [10].

Our patient also had hemoccult-positive stool, indicating that she had gastrointestinal tract bleeding. She most likely was bleeding into the esophagus from the arterial fistula leading to normocytic anemia and hemoccult-positive stool. Fistulas between the pulmonary artery and esophagus are rare in the pediatric population, and if not diagnosed in a timely manner, can lead to rupture and death. Since they are rare, they are often not considered in the differential diagnosis of pediatric chest pain. Patients with congenital cardiac disease have developed aorto-esophageal fistulas but this too is rare [11-18]. To diagnose an esophageal-arterial fistula requires a high index of suspicion and either arteriography or CT is usually performed.

The acute management of a patient with a ruptured pulmonary artery is essentially emergent surgery. As seen in this patient, exsanguination can occur quickly, despite resuscitation with IV fluids and blood products. Acute GI bleeding is typically managed with antihistamines, proton pump inhibitors, and octreotide as well as fluid resuscitation [14, 15, 19]. Rarely is endoscopy performed emergently to tamponade the hemorrhage and this patient was too unstable for endoscopy.

Conclusion

When pediatric patients present to the emergency department with common complaints and unstable vital signs, Pediatric Emergency Physicians should always consider a wide differential diagnosis. When our patient presented to the emergency department a second time with the same complaints, she was found to be tachycardic and tachypneic. At that point, a broader differential diagnosis was warranted because of her abnormal vital signs and a lack of improvement for the same complaint despite adherence with recommended treatment. Though these vital signs could be explained by the pain she was experiencing, the anemia indicated either a chronic disease state or blood loss. Although the initial images were not useful, laboratory evaluation did indicate the patient had a marked inflammatory response. When evaluating a patient with elevated inflammatory markers and hemoccult-positive stool, gastrointestinal bleeding should be considered. Once diagnosed, rapid treatment of arterial fistulas can prevent death in pediatric patients.

References


