Case Study
David M. Cline, MD
Acute Chest Syndrome

History: 31 year old black male with SS sickle cell disease presents the emergency department with complaint of “pain crisis.” The patient states this episode is identical to his typical pain crisis, where he experiences pain in his chest, his abdomen, and both of his upper lateral thighs. The pain began yesterday, and has not responded to his oral pain medication, Dilaudid 4 mg tabs, 1 every 4 hours as needed for pain. Additional past medical history includes avascular necrosis of both hips, priapism, NSTEMI, cholecystectomy, and one prior episode of acute chest syndrome. He smokes cigarettes, ½ pack per day, and drinks beer occasionally. The patient averages 1 visit to the emergency department every month, and he is admitted to the hospital approximately 50% of the time.

Physical exam: Triage vital signs include temperature of 99.6, blood pressure of 113/65 mm Hg, pulse 98, respirations 20, oxygen saturation of 93% on room air. In general, he appears acutely in pain. HEENT is within normal limits except for mild icterus of the conjunctiva, lungs clear, heart rate and rhythm regular, no murmurs. Abdomen soft with diffuse tenderness that is similar to what had been described previously in his medical record. He is tender over both hips and lateral thigh areas as previously described in the record. His peripheral pulses are intact. He is alert and oriented.

ED Course: After receiving pain medication, his oxygen saturations drop to 80%, a pattern that has not been noted previously with his typical pain crisis visits. His oxygen saturations respond to increased oxygen therapy. Laboratory analysis reveals a white blood cell count of 17,000, with segs 66.7%, Bands 1.76%, lymphs 25.8%, hemoglobin of 8.9 (his baseline), Chest X-ray shows the following subtle finding:
Reading from radiologist: “Basilar opacity over right base, best seen on the lateral film.” The patient is started on broad spectrum intravenous antibiotics including coverage for atypical organisms.
Hospital course: The patient is admitted to the floor, and the next day, his oxygen requirement increases, he becomes more tachypneic and tachycardic. He is transferred to the intensive care unit for closer observation and exchange transfusion. He gradually improves without intubation. He is discharged home after a 10 day hospital stay. Diagnosis: Acute Chest Syndrome (ACS).

Discussion: This case illustrates several important points about Acute Chest Syndrome. The patient has three risk factors for acute chest: SS disease, current smoker, and prior history of acute chest syndrome. Because the patient frequently complains of chest pain with his uncomplicated vaso-occlusive crisis, differentiating acute chest from uncomplicated pain crisis is difficult, and the clinicians did not suspect it prior to the chest x-ray. Because the findings on chest x-ray are often subtle, especially initially, comparing the current film to prior films is essential. Although the cause of acute chest is frequently non infectious, the recommendation is to cover patients with a 4th generation cephalosporins and macrolide antibiotics. The patient deteriorated after admission as recognized by his dropping oxygen saturations; this is a common course, and frequently acute chest syndrome develops (or is diagnosed) after admission for vaso-occlusive crisis. It is possible that earlier transfusion could have prevented the need for ICU stay. The patient eventually improved, but required intensive care and exchange transfusion.