Multifocal Osteomyelitis Mimicking Metastatic Lytic Disease
Alysha Vartevan, D.O. and Patricio Rossi, M.D.

Introduction
Osteomyelitis is an inflammation of the bone, which is typically caused by infection. Staphylococcus is responsible for most cases of osteomyelitis (1). Chronic osteomyelitis results from a long-standing infection, on average longer than 6 weeks (2). Chronic osteomyelitis typically results in sclerosis (3). The top differential diagnoses for multiple lytic lesions in an adult are metastatic disease, multiple myeloma, and lymphoma (4).

Case Presentation
A 57-year-old confused Hispanic male presents to the emergency department with a three-day history of leg pain. His past medical history is significant for epilepsy, alcoholism, and psychosis. Physical exam reveals limited range of motion and pain of the left hip and knee. Admitting labs demonstrated mild leukocytosis. CECT of the pelvis and chest were obtained during the hospital stay.

Imaging Findings
An initial radiograph performed in the Emergency Department revealed a left pubic rami fractures (Fig 1.). A follow-up contrast enhanced CT of the pelvis demonstrated a left superior pubic ramus fracture of indeterminate age, and a left inferior pubic ramus fracture that showed a lytic appearance with expansion of the bone. In addition, the CT showed a large multi-septated and multi-loculated hypodense fluid collection with a few tiny air bubbles seen in the non-dependent portion of the collection. The collection extended between the fractures towards the left inguinal area within the adductor muscle group (Fig 2.). On the second hospital day, the patient became diaphoretic and tachypenic, and a CT angiography of the chest was obtained to evaluate for a pulmonary embolism. The CT showed a left humeral lytic expansile and destructive bone lesion with an associated fluid collection extending from the left axilla to the supraclavicular region (Fig 3.).

Pathology
Subsequent biopsies and cultures were obtained from the left axillary soft tissue mass as well as the left inguinal fluid collection. The culture showed Staphylococcus Aureus from both the left axilla and inguinal region with the same sensitivities. Cytology was negative for atypia, but positive for fibrinopurulent exudate compatible with abscess.

Discussion
As previously stated, osteomyelitis typically results in sclerosis (3). In contrast, our patient had lytic destruction as opposed to sclerosis. The top differential diagnoses for multiple lytic lesions in an adult include metastatic disease, multiple myeloma, or lymphoma (4). An infectious process such as osteomyelitis is not usually included in the differential diagnosis. In addition, it is uncommon for an adult to have multiple areas affected by osteomyelitis, as seen in our patient, compared to the pediatric population (5).

Our patient has no history of immune deficiency disorders, sickle cell anemia, IV drug abuse, diabetes mellitus or subacute bacterial endocarditis, which all increase the risk of multifocal bacterial osteomyelitis (3). Pathological fractures are not common in osteomyelitis, especially in cases without devastating sepsis (6). Our patient had negative blood cultures throughout his ten-day hospital stay. Our patient also had no prior history of osteomyelitis, which has been theorized to increase the risk of pathological fractures (6). The source of our patient’s initial infection is unknown. It is uncertain if our patient had osteomyelitis leading to the multiple soft tissue abscesses, or if the soft-tissue abscesses lead to the osteomyelitis. It is also unclear why the bone infections lead to lytic destruction of the humeral head and pathological expansile fractures of the pubic rami in such a short amount of time as seen in figure 4 (less than 1 to 2 years).

Conclusion
Our patient had an uncommon presentation of multifocal osteomyelitis, which typically occurs in the pediatric population. The bones affected by osteomyelitis do not usually mimic lytic metastases. CECT imaging is useful in evaluating lytic bone lesions with associated soft tissue abscesses. Histopathological correlation is key in determining malignancy or atypical cells. It is important to consider osteomyelitis in your differential diagnosis despite an unusual presentation to ensure prompt administration of intravenous antibiotics.

References