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Ultrasound in Emergency Medicine

ULTRASOUND-GUIDED DIAGNOSIS OF OCCULT MANDIBULAR OSTEOMYELITIS

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☐ **Abstract—Background: Skin and soft-tissue infections (SSTIs) are common disease presentations to the emergency department (ED), with the majority of the infections attributed to community-acquired methicillin-resistant *Staphylococcus aureus*. Rapid and accurate identification of potentially serious SSTIs is critical. Clinician-performed ultrasonography (CPUS) is increasingly common in the ED, and assists in rapid and accurate identification of a variety of disease processes. Case Report: A 21-year-old female presented to the ED with chin swelling and "boils." Although her visual examination was benign, CPUS of her facial swelling quickly established a more concerning disease process, which was eventually confirmed by aspiration and bone biopsy to be mandibular osteomyelitis. The causative organism, *Serratia odorifera*, is rarely associated with infections, and we are aware of no previously reported cases of osteomyelitis due to this species. Why Should an Emergency Physician Be Aware of This?: In this case of mandibular osteomyelitis, CPUS rapidly and accurately identified abnormal bony cortex of the mandible and an associated fluid collection. CPUS of an otherwise benign presentation of a facial infection led to a maxillofacial computed tomography scan, aspiration and biopsy, and then elective debridement of the bone infection. Emergency physicians should be aware of the utility of CPUS and the need to carefully investigate SSTIs presenting to the ED.** © **2014 Elsevier Inc.**

☐ **Keywords—ultrasound; ultrasonography; osteomyelitis; Serratia; abscess; soft-tissue infections**

INTRODUCTION

Patients with skin and soft tissue infections (SSTIs) commonly present to the emergency department (ED), with the majority of the infections attributed to community-acquired methicillin-resistant *staphylococcus aureus* (CA-MRSA) (1). In the United States, from 1997 to 2005, annual outpatient visits for complaints related to cellulitis or abscess increased from 4.6 million to 9.6 million (2). We present a case of an otherwise benign ED presentation for a facial skin infection in a healthy 21-year-old female to illustrate the value of clinician-performed ultrasonography (CPUS) in the eventual diagnosis of mandibular osteomyelitis. The causative organism, *Serratia odorifera*, is rarely associated with infections, and our review found no previous cases of osteomyelitis due to this species.

CASE REPORT

A 21-year-old female with no significant medical history presented to the ED with a history of chin swelling and

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"boils." One month before ED presentation, she was treated by her primary physician with ampicillin/sulbactam, and she described clinical improvement on the antibiotics, although with incomplete resolution of her chin infection. Her symptoms worsened 1 week before ED presentation. In addition to "pimples" and painful swelling to the chin, she complained of lower-teeth looseness. She denied fevers, chills, neck pain, difficulty swallowing, or a history of SSTIs.

On physical examination, the patient had normal vital signs, including a temperature of 37.0°C. Examination of the chin showed several pustular lesions with underlying erythema and mildly tender swelling (Figure 1). Lower incisors were slightly loose but nontender. The oropharynx was nonerythematous. The neck was nontender and without lymphadenopathy. The rest of the physical examination was normal.

A bedside ultrasound was performed to assess for an abscess or cellulitis (Figure 2, Video 1). The ultrasound revealed a fluid collection adjacent to the mandible, with an irregular cortical surface suggestive of osteomyelitis. Based on the ultrasound, maxillofacial computed tomography (CT) was performed (Figure 3). The CT revealed osseous destruction of the mandibular symphysis, consistent with osteomyelitis.

Figure 1. Anterior aspect of the patient's chin.

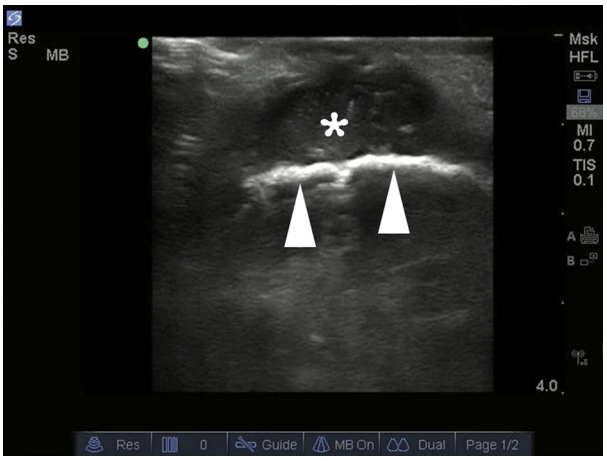

Figure 2. Bedside ultrasound demonstrating a fluid collection (asterisk) adjacent to the mandible (arrowheads). Note the irregular cortical surface of the mandible.

The oral/maxillofacial service (OMFS) then evaluated the patient in the ED and performed a bedside aspiration and incisional biopsy of cortical bone. The patient was discharged from the ED on clindamycin. At the time of her follow-up visit with OMFS, a definitive diagnosis of osteomyelitis was made based on the final pathology from the biopsy, and the culture demonstrated heavy growth of *S. odorifera*, sensitive to trimethoprim/sulfamethoxazole. She then underwent elective debridement

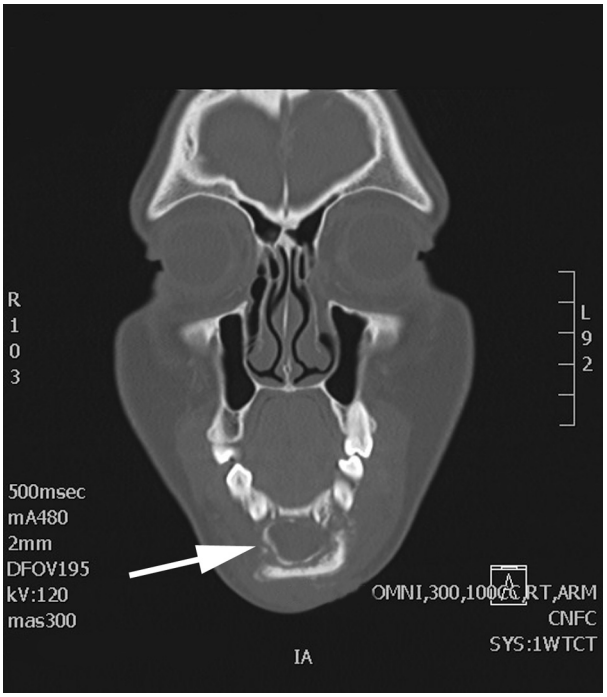

Figure 3. Coronal CT view demonstrating erosion of the buccal plate (arrow) and the bone supporting the lower incisors.