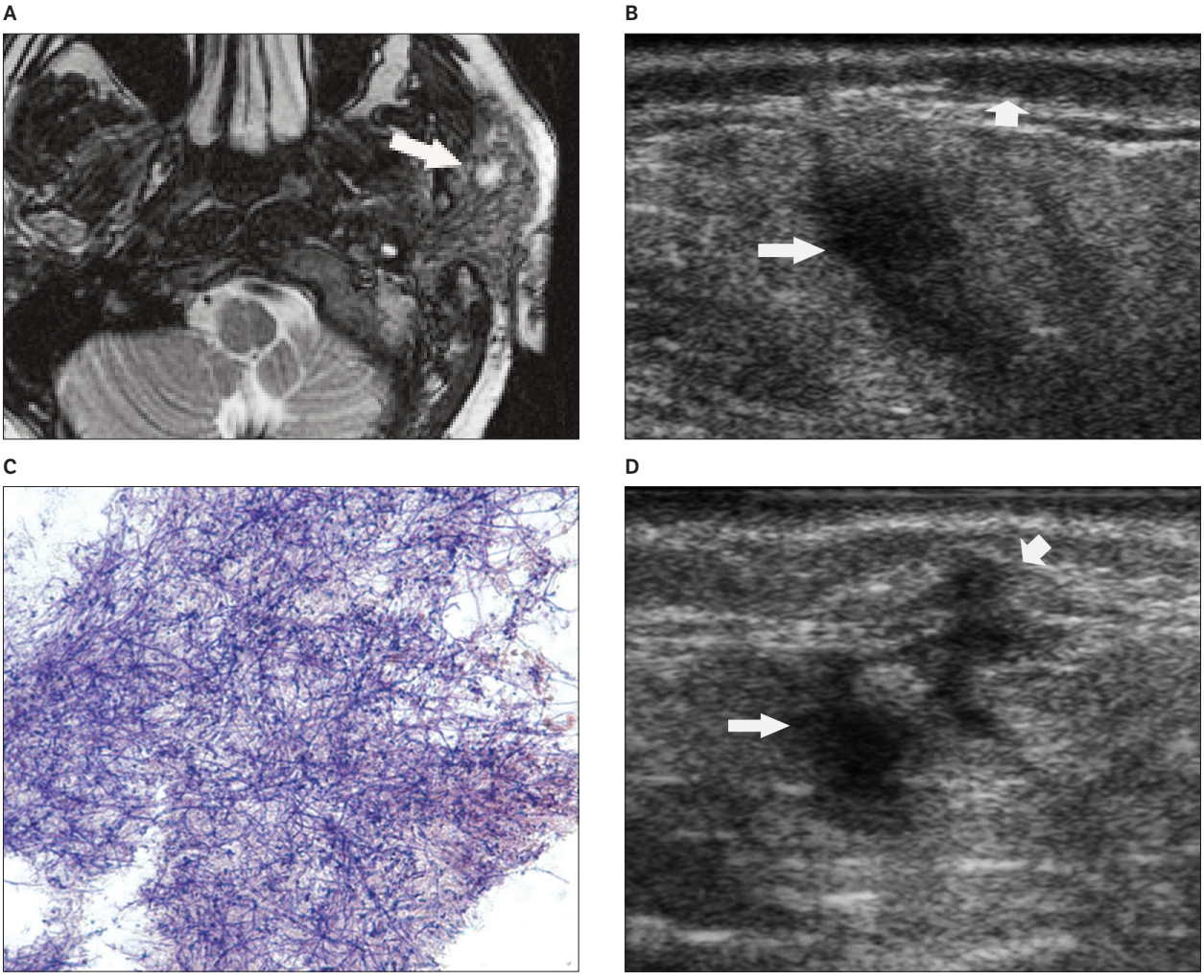
Extraglandular Extension of Parotid Actinomycosis After Sonographically Guided Fine-Needle Aspiration

Sonographically guided fine-needle aspiration and, more recently, core biopsy have been increasingly used for diagnosis of parotid masses.[1,2] Complications of these procedures are rare but include hemorrhage, parotid gland infarction, infection and inflammation, and neoplastic seeding along the needle tract.[3,4] We describe a previous unreported complication of sonographically guided fine-needle aspiration biopsy with extraglandular seeding of parotid actinomycosis along the needle tract requiring prolonged antibiotic therapy.

A 76-year-old man presented with a 2-month history of left jaw pain and a mildly tender left jaw mass. The overlying skin appeared normal. There was no associated lymphadenopathy. The remainder of his physical examination and laboratory values were unremarkable, with no evidence of fever or leukocytosis.

Magnetic resonance imaging of the parotid gland showed a T2 hyperintense enhancing lesion in the left parotid gland with associated edema (Figure 1A). A parotid neoplasm such as a Warthin tumor was thought to

Figure 1. Extraglandular extension of parotid actinomycosis in a 76-year-old man. **A**, T2-weighted magnetic resonance image showing a focal area of high signal (arrow) in the left parotid gland. **B**, Sagittal grayscale image of the parotid gland showing irregularly marginated elliptical hypoechoic lesions (long arrow). Note the normal subcutaneous tissues (short arrow). **C**, Gram stain of the fine-needle aspiration specimen showing Gram-positive rods with extensive filamentous branching characteristic of actinomycosis. **D**, Sonogram obtained 6 months later showing a residual stellate lesion in the parotid gland (long arrow) with subcutaneous extension of infection (short arrow).



be the leading possibility, although focal infection could not be excluded. The patient was referred for sonographically guided fine-needle aspiration. Sonography was performed with a 14-MHz linear transducer (Siemens Medical Solutions, Malvern, PA). It showed a focal irregular hypoechoic lesion measuring 1.3 × 1.0 × 1.2 cm (Figure 1B), with an elliptical configuration without evidence of intrinsic flow on color Doppler imaging. Using sterile technique, the parotid lesion was biopsied with sonographic guidance. Three passes with a 25-gauge needle and 3 passes with a 22-gauge needle were performed. The final cytology report and Gram stain were consistent with actinomycosis associated with fibrinopurulent debris and surrounding acute inflammation (Figure 1C).

The patient underwent a 60-day course of oral doxycycline at a dosage of 50 mg twice daily due to a penicillin allergy. Although at the end of therapy the patient had substantial diminution in facial swelling, there was still mild jaw tenderness at the time of the termination of antibiotics.

Six months after his initial presentation, the patient had increasing jaw pain and soft tissue swelling over the left parotid gland, now associated with a firm subcutaneous nodule and overlying reddish skin discoloration. Sonography performed at that time showed residual stellate-shaped hypoechoic areas within the parotid gland that now extended through the parotid gland into the subcutaneous tissues (Figure 1D). When compared to the sonographically guided fine-needle aspiration study, it was apparent that the infection had extended along the needle tract. The diagnosis of residual actinomycosis with subcutaneous fistulization was made, and the patient was given additional doxycycline at a dosage of 100 mg twice daily for a subsequent 3-month course. At the termination of the continued antibiotic therapy, there was complete resolution of the patient's jaw pain, swelling, skin discoloration, and subcutaneous nodule.

Actinomycosis is a rare progressive granulomatous disease most often caused by *Actinomyces israelii*, which is a Gram-positive anaerobic commensal bacteria within the oral cavity.[5] Actinomycosis may be classified into distinct clinical forms based on its anatomic site of involvement. Cervicofacial actinomycosis is the most common form, representing about 55% of all reported cases.[5] However, involvement of the parotid gland is rare, and the clinical presentation is often mistaken for a parotid gland neoplasm.[5] One of the characteristic features of actinomycosis infection is its ability to locally invade through tissue planes and produce fistulous tracts.[5] We report a rare complication of sonographically guided fine-needle aspiration of the parotid gland with extraglandular extension of actinomycosis along the needle tract.

The initial interpretation of the magnetic resonance imaging of the parotid gland in this patient favored a parotid neoplasm, although a focal infection could not entirely be excluded. The sonographic appearance of the parotid lesion was unusual, given its poorly defined margins and elliptical shape. Once the sonographically guided fine-needle aspiration confirmed actinomycosis, the patient received a standard 60-day course of antibiotic therapy, and although the patient initially responded with a decrease in soft tissue swelling, there was no imaging documentation of resolution of the infection, and months later, the patient returned with subcutaneous extension of infection along the fine-needle aspiration needle tract. The patient was given an empirical course, and follow-up imaging was not performed to document resolution of the parotid lesion.

In summary, we report a rare complication of sonographically guided fine-needle aspiration of the parotid gland, namely extraglandular extension of actinomycosis infection along the biopsy needle tract. To our knowledge, such a case has not been reported previously. Because of the increasing use of sonographically guided fine-needle aspiration biopsy of the parotid gland, it is likely that more such cases will be reported. We suggest that when encountering parotid actinomycosis, antibiotic therapy should not be discontinued before imaging documentation of resolution of the parotid infection.

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