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Case Report

Staphylococcus lugdunensis abscess with deep tissue involvement☆,☆☆

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Introduction

Coagulase-negative Staphylococci are commonly found on human skin (Heldt Manica and Cohen, 2017; Zaaroura et al., 2018). However, one coagulase-negative *Staphylococcus* species, *Staphylococcus lugdunensis*, has been increasingly recognized for its virulence and propensity to cause locally destructive skin and soft tissue infections in immuno-compromised hosts (Arias et al., 2010; Zaaroura et al., 2018). Despite this, *S. lugdunensis* is not frequently discussed in the dermatology literature, and recommendations with regard to the management of skin and soft tissue infections caused by this organism are lacking.

Herein, we present a case of a large, suppurative, cutaneous, and soft-tissue abscess with deep muscle invasion due to *S. lugdunensis* to highlight the pathogenicity of this organism. We provide an evaluation and treatment recommendations for those who encounter this microbe as a cause of skin and soft-tissue infections in clinical practice.

Case

A 68-year old male patient presented to the dermatology clinic for evaluation and treatment of a draining lesion on the lower back that had been progressively growing in size over the previous 2 weeks. The patient was unable to identify any inciting factors and denied recent trauma to the area. On examination, the patient had a 5.5 × 4 cm fluctuant subcutaneous abscess on the left lower back that was actively draining purulent fluid from an overlying ostium. The surrounding tissue was woody and indurated on palpation.

Due to concern for underlying malignancy and the possibility of deep extension of an abscess, a computed tomography (CT) scan was obtained. Key images (Fig. 1) from the CT scan show a 44.4 × 30.6 × 53.7 mm soft-tissue mass extending from the skin surface into the trapezius muscle. There is a central hypodensity and diffuse inflammatory changes most consistent with an infectious process, such as an abscess. The patient was initiated on doxycycline 100 mg twice daily and returned to the clinic 1 week later without significant improvement.

Incision and drainage was performed at that time, and bacterial cultures were collected from a sample of the purulent abscess drainage. The bacterial culture isolated S. *lugdunensis* that was sensitive to doxycycline. Considering the severity of the patient's initial presentation and the prevalence of *S. lugdunensis* infections among immunocompromised hosts, the patient underwent laboratory evaluation for underlying immunodeficiency, including testing for HIV, quantitative immunoglobulins, and hemoglobin A1C, all of which failed to reveal an underlying cause for immunosuppression.

The patient resumed doxycycline for 2 additional weeks with resolution of the abscess. The patient was encouraged to undergo age-appropriate malignancy screening as directed by his primary medical doctor.

Discussion

S. lugdunensis is a coagulase-negative *Staphylococci* that can cause locally destructive skin and soft-tissue infections much like *S. aureus* (Lambe et al., 1990; Schnitzler et al., 1998; Vandenesch et al., 1993a, 1993b; van der Mee-Marquet et al., 2003; Zaaroura et al., 2018). This species of *Staphylococcus* was first isolated in human subjects in 1988 by Freney et al and has since been recognized as pathogenic for a variety of infections, including infective endocarditis, cellulitis, necrotizing fasciitis, osteomyelitis, prosthetic joint infection, and central line–associated bloodstream infection (Zaaroura et al., 2018).

S. lugdunensis comprises 5% to 6% of the coagulase-negative *Staphylococcus* species isolated from skin infection cultures (Akiyama et al., 1998). It is most frequently identified in women, postoperatively, in immunocompromised patients, in the setting of underlying malignancy, and in diabetic patients (Bellamy and Barkham, 2002; Herchline and Ayers, 1991). Several studies have demonstrated that abscesses and wound infections are the most common infections caused by *S. lugdunensis* and that these infections occur most frequently overlying the breast and the perineal and inguinal regions (Arias et al., 2010; Böcher et al., 2009; Heldt Manica and Cohen, 2017). Furthermore, *S. lugdunensis* has also been isolated from cultures of superficial skin infections, including folliculitis and cutaneous

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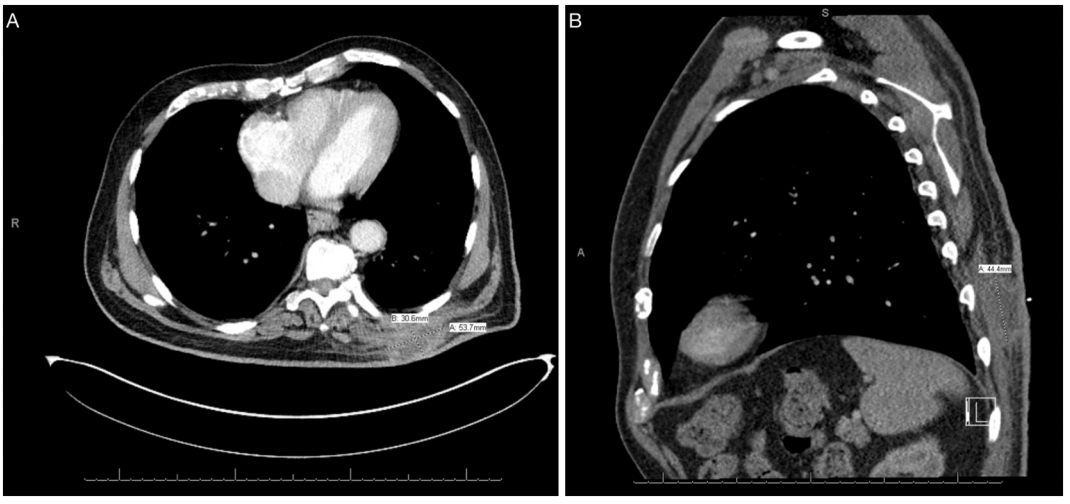

Fig. 1. Computed tomography scan with intravenous contrast, showing (A transverse, B sagittal) a subcutaneous soft-tissue mass in the posterior left back that measures 5.4 × 3.0 × 4.4 cm. The center is hypodense, and inflammatory changes surround the mass. The mass extends from the skin into the lower trapezius muscle without underlying bone involvement.

pustulosis, and from abscesses in individuals with hidradenitis suppurativa (Zaaroura et al., 2018).

Conclusions

Ultimately, recognition of *S. lugdunensis* as a cause of skin and soft-tissue infections is important to dermatologists for the following reasons: 1) *S. lugdunensis* is not always contaminant or commensal despite being a coagulase-negative *Staphylococcus* species; 2) although the number of reports on methicillin-resistant *S. lugdunensis* are increasing and may result in treatment failure in rare cases, the majority of isolates are pan-sensitive to antibiotics that are frequently used for the treatment of skin and soft-tissue infections (eg, cephalexin and doxycycline); 3) in critically ill patients, *S. lugdunensis* skin infections may result from bacterial seeding secondary to serious underlying pathology, such as infective endocarditis or central line-associated bloodstream infection; and 4) *S. lugdunensis* commonly occurs in the setting of diabetes, underlying malignancy, or underlying immunocompromised states; therefore, an evaluation for diabetes, HIV, common variable immunodeficiency, and underlying malignancy is recommended when appropriate clinical suspicion and severity of infection exists (Choi et al., 2010; Fleurette et al., 1989; Goldstein et al., 2006; Higaki et al., 1999; Kragsbjerg et al., 2000; Mateo et al., 2005; Vandenesch et al., 1993b).

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