No focus for *Staphylococcus aureus* bacteremia? Don't swallow it! An educational report of a rare sepsis presentation

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Mortality risk remains high in septic shock due to *Staphylococcus aureus*, which renders correct identification and treatment of the focus of infection mandatory for saving lives. While this organism frequently causes cardiac device infections and infective endocarditis [1], rare presentations are easily overlooked and require special attention.

An 82-year-old woman presented to our emergency room with clear signs of infection (C-reactive protein and procalcitonin elevated > 10× upper limit of norm). Her medical history was negative for any kind of infectious disease or implanted device, but she suffered from insulin-dependent diabetes. In spite of routine screening for the focus of infection (clinical exam, chest-X-ray, urine sampling) and early initiation of empiric antibiotic therapy (piperacillin/tazobactam) according to guidelines of the surviving sepsis campaign [2], she developed progressive circulatory deterioration and was admitted to our intensive care unit in septic shock later that day. Antibiotic therapy was escalated to combination therapy (+ ciprofloxacin) for septic shock, but again, screening for a focus of infection turned out negative. The next day, blood cultures returned positive for *S. aureus* – although without echocardiographic signs for endocarditis or a compatible thoracoabdominal infection on computed tomography (CT) scans. Antibiotic therapy was changed again to piperacillin/tazobactam and vancomycin with respect to the identified pathogen.

On careful secondary examination that second day, the patient's hoarse voice prompted pharyngeal endoscopy. A considerable submucosal pharyngeal swelling was further evaluated using magnetic resonance imaging (MRI). Cervical MRI scans (Figure 1) revealed a 60 × 23 × 52 mm parapharyngeal abscess, multi-segment spondylodiscitis (wide arrows) and spinal cord compression (thin arrows). As a consequence of the focus identification, the patient underwent emergency neurosurgery with abscess drainage and laminectomy the same day – but unfortunately died 3 weeks later from this disease in spite of maximum therapy.

Spondylodiscitis – especially of the cervical spine – is very rare, with an estimated incidence of 0.4–2.4/100,000 [3]. As in infectious endocarditis, hematogenic dissemination of *S. aureus* from other entry points (respiratory or urogenital tract, skin) is the most common pathogenesis [4], but often eludes identification. Diabetes mellitus is a common risk factor. Mortality risk is considerable at > 10% and especially high in patients with *S. aureus* bacteremia and septic shock [4].

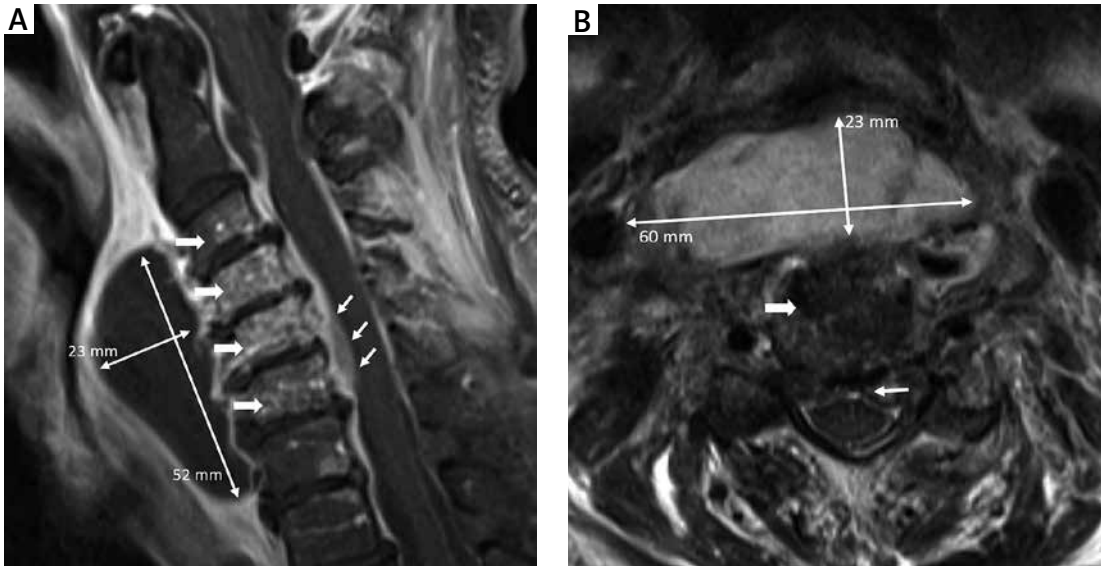

Figure 1. Cervical magnetic resonance imaging illustrating the dimensions of infection: T1-weighted gadolinium-enhanced sagittal section (**A**), T2-weighted cross-section at C4 (**B**). Wide arrows indicate spondylodiscitis (C3–C7), thin arrows demonstrate abscess dimensions (60 × 23 × 52 mm) and spinal cord compression (C4–C6)
↑ T2-weigted cross-section at C4, → T1-weigted gadolinium enhanced sagittal section.

Thus, this case highlights the importance of the quest for the focus of infection in septic shock caused by *S. aureus*. When an obvious focus is nonexistent, careful examnination of every abnormal clinical feature – such as a hoarse voice – can make the difference for any patient.

Conflict of interest

The authors declare no conflict of interest.

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