

Disseminated cutaneous and pulmonary abscesses in an injecting drug user caused by a Panton-Valentine leucocidin-positive, methicillin-susceptible *Staphylococcus aureus* strain

A. Ditzen · R. Ehricht · S. Monecke

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Abstract *Staphylococcus aureus* is an important pathogen in injecting drug users. We illustrate this with a case of a young female patient who was admitted with multiple cutaneous and pulmonary abscesses. The causative strain was characterised using diagnostic microarrays. Genes encoding Pantan-Valentine leucocidin (PVL) were detected, *mecA* was absent. The overall hybridisation profile allowed us to assign this isolate to ST152, being related to an epidemic community-acquired methicillin-resistant *S. aureus* (caMRSA) strain from south-eastern Europe. While PVL-positive MRSA has frequently been observed in injecting drug users, methicillin-susceptible isolates are usually not screened for the presence of PVL genes. The use of diagnostic microarrays contributes to patient care by the simultaneous detection of resistance and virulence markers. It also facilitates the study of phylogenetic relationships of epidemic strains.

Case report

A 24-year-old female patient was admitted to hospital with left-sided thoracic pain and an abscess due to intravenous drug injection into her left forearm. After the opening of the abscess and surgical wound management, the patient developed a systemic inflammatory response syndrome (SIRS) and was transferred to the intensive care unit. Her past medical history revealed chronic hepatitis C infection and a series of unsuccessful detoxification attempts, as well as pulmonary embolism due to right-sided deep vein thrombosis, one month prior to her current hospital admission. Anticoagulation therapy has been discontinued by the patient against medical advice. On physical examination, her blood pressure was hypotonic (90/60 mmHg), her heart rate was tachycardic (100/min) and her body temperature was 40°C. She had multiple injection sites and scars from prior abscesses on her limbs. Chest auscultation revealed ubiquitous rhonchus; the circumference of her right leg exceeded that of her left leg, but she had no pain on compression of her calves. Transoesophageal echocardiography showed neither vegetations of the valves nor abnormalities in ventricular function. The computed tomography scan of her chest showed multiple lung abscesses in all segments, some of them with trapped air (see Fig. 1). Her laboratory results showed elevated inflammation markers (C-reactive protein 316.7 mg/l, leucocytes 16.6 Gpt/l, procalcitonin 2.87 ng/ml). The patient was started on a five-day course of empirical intravenous antibiotic therapy with ceftriaxone and clindamycin. Her physical state continuously improved and her inflammation markers decreased over time.

The microbiological analysis of pus, bronchoalveolar lavage, venous and arterial blood cultures, as well as nasal and inguinal swabs, revealed *Staphylococcus aureus*.

A. Ditzen (✉)
Department of Medicine III,
University Hospital of Dresden,
Fetscherstrasse 74,
01307 Dresden, Germany
e-mail: anette.ditzen@uniklinikum-dresden.de

R. Ehricht
CLONDIAG GmbH,
Loebstedter Strasse, 103-105,
07749 Jena, Germany

A. Ditzen · S. Monecke
Institute for Medical Microbiology and Hygiene,
Faculty of Medicine “Carl Gustav Carus”,
Technical University of Dresden,
Fetscherstrasse 74,
01307 Dresden, Germany

infections. Due to the intravenous drug abuse and their habit of sharing injection needles, these patients are generally prone to be infected by skin colonising bacteria, especially *S. aureus*. An interesting issue is the association of PVL-positive *S. aureus* and disease in IDUs. PVL-positive MRSA have frequently been observed in patients belonging to this particular risk group [10, 11]. Because of the lack of reports addressing PVL-positive MSSA, it cannot be determined whether these patients are at risk of contracting PVL-associated disease (caused by either MSSA or MRSA), or whether they are just prone to being colonised by any caMRSA strain, including PVL-negative strains [12, 13]. PVL itself is no risk factor for septicemia [14], but an artificial translocation of PVL-positive *S. aureus* into the bloodstream as facilitated by contaminated syringes might result in some kind of disseminated PVL-associated disease, as presented by our patient. Thus, the role of PVL in the pathogenesis of *S. aureus* infection of IDUs should be further investigated.

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