First documented case of a *Staphylococcus lugdunensis* strain carrying the mecA gene in Northern Europe

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*Staphylococcus lugdunensis* is a clinically common wound pathogen belonging to coagulase-negative staphylococci. We herein report the first case of a *S. lugdunensis* isolate carrying the mecA gene in Northern Europe.

**Keywords:** *Staphylococcus lugdunensis*; mecA; Northern Europe

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*Staphylococcus lugdunensis* is a Gram-positive bacterium that was first described in 1988 by Freney et al. (1). It belongs to the coagulase-negative staphylococci (CoNS), but it is clinically more similar to *Staphylococcus aureus* due to its virulence and pathogenesis (2, 3). It is a common colonizer of the human skin (4), and it is the only pathogen in approximately 10% of skin and soft tissue infections (5). Apart from these infections, it is reported to cause endocarditis with high mortality (3), osteomyelitis, peritonitis, infections associated with foreign bodies (6), and urinary tract infections. With proper identification methods, the incidence is 53/100,000 infections per year (2).

The first case of a methicillin-resistant *S. lugdunensis* carrying the mecA gene was documented in 2003 (7). Since then, only four additional cases have been reported on three different continents (6, 8–10). Here, we describe the first reported case of mecA-carrying *S. lugdunensis* in Northern Europe.

**Case report**

A 93-year-old man visited his general practitioner for a wound on his left calf that had not healed after 1.5 months of observation. He had not received any antibiotic treatment recently, and his contacts with health care were limited. When inspected, four grouped skin lesions were noticed on the left calf. They ranged from 5 to 15 mm in diameter, and the largest had a suppurative ulcer with a central necrosis. The largest wound was cultured, and punch biopsies were taken. The pathological and anatomical diagnosis (PAD) showed basal cell carcinoma, and the cultures yielded growth of *S. lugdunensis* and group G streptococci. The basalomas were removed surgically, and the wounds healed thereafter without any antibiotic treatment.

**Bacterial findings**

The wound sample was inoculated onto blood and chocolate agar (Becton, Dickinson, and Company, Sparks, MD, USA). The plates were incubated overnight at 37°C, and *S. lugdunensis* and group G streptococci were identified with conventional methods. Antibiotic susceptibility to isoxazolylpenicillin, cefoxitin, fusidic acid, clindamycin, erythromycin, and trimethoprim-sulfamethoxazole was determined for the *S. lugdunensis* strain by disk diffusion test, according to the recommendations of the Swedish Reference Group for Antibiotics (www.srga.org). The strain was resistant to cefoxitin (inhibition zone 20 mm) and isoxazolylpenicillin (inhibition zone 9 mm). It was susceptible to all other antibiotics tested.

The mecA gene was detected with PCR (11), and the identity of the species was confirmed with 16S rDNA sequencing (12).
Discussion

*Staphylococcus lugdunensis* is not a rare finding in clinical samples, but it is often identified as a CoNS and not to the species level in clinical microbiology laboratories (2). Its pathogenic potential is thereby missed that may lead to an unnecessary treatment delay.

*Staphylococcus lugdunensis* is not only a clinically relevant pathogen with an ability to form biofilms, but it has also become a possible carrier of the meca gene in recent years. Overall, this gene appears to be on the move. It has disseminated through multiple acquisitions by different clones of otherwise usually beta-lactam susceptible species, such as *Staphylococcus saprophyticus*, during the last decade (13, 14). In this case, there was resistance to both antibiotics, but the inhibition zone around the cefoxitin disc was much larger and could have been overlooked if the zone had not been measured. In addition, the resistance to beta-lactams in *S. lugdunensis* can be mediated by changes in other penicillin-binding proteins (PBPs) (16).

Patients with diabetes mellitus and implants appear to be at increased risk for infections with *S. lugdunensis* (2, 6). Hitherto, no report has indicated that this bacterium is associated with basal cell carcinoma, but it seems reasonable to assume that the patient’s skin lesions increased the risk of infection with typical wound pathogens. Since the patient had not been treated with antibiotics or been admitted to any hospital recently, the strain was probably community acquired. However, it is worrying that it was found in a country with a relatively low selective pressure and with an isolation frequency below 5% (17).

Although *S. lugdunensis* strains harboring the meca gene have been rare clinical findings, so far, staphylococcal clones with this type of resistance have become more frequent. An acceleration of this development would mean a loss of beta-lactams as first-line drugs for treatment of more severe skin and soft tissue infections in the future. With rapid and correct identification of methicillin-resistant CoNS with a higher pathogenic ability, such as *S. lugdunensis*, the awareness may increase among physicians resulting in adequate treatments and early infection control measures.

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