LETTER TO THE EDITOR

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A third case of USA300 community-associated methicillin-resistant *Staphylococcus aureus* infection in Korea

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To the Editor,

The global epidemiology of *Staphylococcus aureus* has changed over the past decade, and this has been characterized by the emergence of community-associated methicillin-resistant *S. aureus* (CA-MRSA), which has spread to hospitals. Several CA-MRSA clones have emerged in various geographic locations, some of which have become widespread worldwide through intercontinental transmission. The most successful pandemic CA-MRSA clone is the Panton-Valentine leukocidin (PVL)-positive sequence type (ST) 8-MRSA-SCC*mec* IV (USA300), which originated in the USA. At present, USA300 or closely related variants have been reported in many countries across five continents [1]. In Korea, a distinct CA-MRSA clone, ST72-MRSA-IV, emerged and has been spreading in both communities and hospitals [2]. Nevertheless, in Korea, only two reported infections caused by the pandemic clone USA300 have occurred to date [3,4]. Here, we report the third confirmed infection caused by the USA300 CA-MRSA strain in Korea.

An 82-year-old female patient, who had no history of international travel, presented with a palpable tender lesion in the suprapubic area on October 17, 2009. She had hypertension for 30 years. Four months earlier, she underwent percutaneous coronary intervention for unstable angina. She developed a painful ulcer in the suprapubic area 2 months earlier, which worsened and was complicated by erythema and purulent discharge beginning 20 days earlier. On admission, she was hypothermic (35.6°C), and had a pulse rate of 77 beats/min, blood pressure of 149/74 mmHg, and respiratory rate of 20 breaths/min. The erythema in her suprapubic area was 10 cm in diameter and had a crust with purulent discharge at the center. Laboratory tests showed 19,260 leukocytes/μL, hemoglobin 12.5 g/dL, platelets 262,000/μL, aspartate transaminase 29 U/L, alanine aminotransferase 27 U/L, lactate dehydrogenase 535 IU/L, blood urea nitrogen 29 mg/dL, and creatinine 1.07 mg/dL. Pelvic magnetic resonance imaging suggested an immature subcutaneous abscess in the suprapubic area with surrounding inflammation (Fig. 1). Cefazolin was administered empirically after requesting cultures of the purulent discharge. These grew MRSA, which was susceptible to ciprofloxacin, gentamicin, clindamycin, rifampicin, co-

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trimoxazole, and tetracycline. The antibiotic regimen was changed to vancomycin, and surgical drainage with debridement of necrotic tissues was performed. All of the symptoms and signs of the subcutaneous abscess subsided after vancomycin injection for 7 days and subsequent use of oral cotrimoxazole for 12 days.

The molecular characteristics of the isolated MRSA strain were compared with those of reference strains. Multilocus sequence typing, SCC*mec* typing, and staphylococcal protein A (*spa*) typing were performed, as described previously [4]. The presence of the *lukF-PV* and *lukS-PV* genes encoding the components of the PVL toxin was screened, as described previously. The isolate was determined to be PVL-positive ST8-MRSA-IV and belonged to *spa* type t008. Pulsed-field gel electrophoresis (PFGE) was performed, as described previously. The PFGE patterns were analyzed using the GelCompar II software (Applied Maths, Sint-Martens-Latem, Belgium) and compared to two reference strains: the SMC USA300-1 strain, a clinical isolate reported twice in Korea [4], and the USA300 reference strain (NRS384), which was obtained from the Network on Antimicrobial Resistance in *Staphylococcus aureus* supported under National Institute of Allergy and Infectious Diseases/National Institutes of Health contract #HHSN2722 0070 0055C. The PFGE patterns of the isolate (SMC USA300-2) showed 81.0% similarity to the USA300 reference strain and 93.3% similarity to the SMC USA300-1 strain, indicating that they are closely related (Fig. 2).

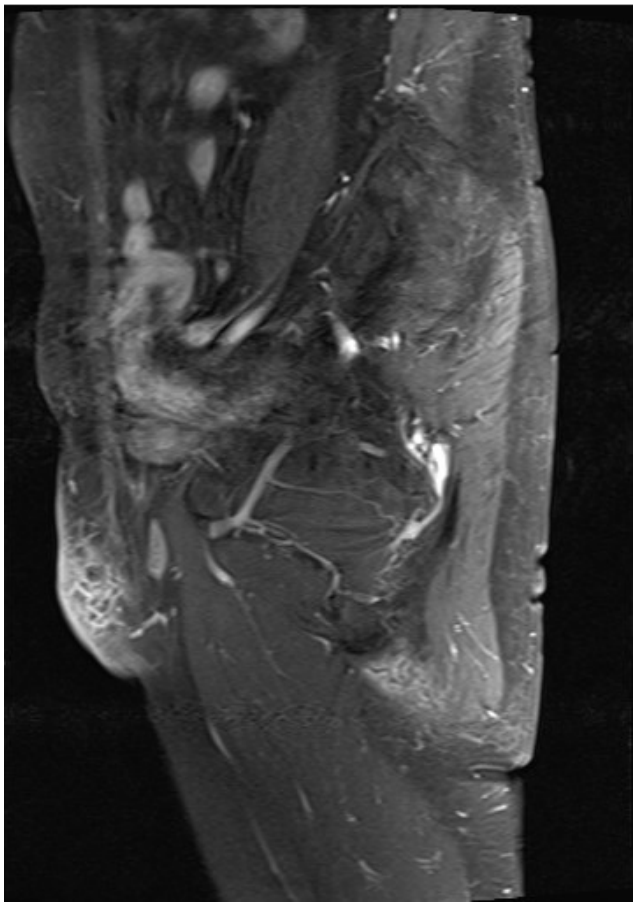

Figure 1. A contrast-enhanced T2-weighted magnetic resonance image with fat saturation shows an enhancing lesion in the subcutaneous layer of the suprapubic area.

This is the third confirmed infection in Korea caused by the USA300 clone. While the first Korean case of USA300 reported in 2008 was in a patient who had traveled to Hawaii [2], the second and current cases had no overseas travel history, which suggests the autochthonous acquisition of the USA300 clone in Korea. Autochthonous acquisition of the USA300 clone has also been documented in some European countries, Canada, and Japan [5]. Interestingly, the PFGE pattern of the MRSA strain from this case was more similar to that of the second Korean strain than to the USA300 reference strain, which also supports the possibility of autochthonous acquisition of the USA300 clone in Korea. It also implies that our case and the second case were caused by autochthonous acquisition of the USA300 clone.

In summary, we report the third confirmed infec-

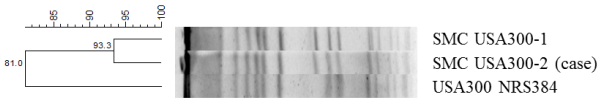

Figure 2. Pulsed-field gel electrophoresis (PFGE) patterns of the methicillin-resistant *Staphylococcus aureus* isolate from the patient and control stains. The analysis of the PFGE patterns showed that this isolate (SMC USA300-2) was the same pulsotype as the USA300 strain. The PFGE pattern of the isolate showed 81.0% similarity to the USA300 reference strain and 93.3% similarity to the SMC USA300-1 strain, which was reported for the second time in Korea. Top lane, the strain in the second case (SMC USA300-1); middle lane, the strain infecting our patient (SMC USA300-2); bottom, the reference USA300 strain (NRS384) obtained from the Network on Antimicrobial Resistance in *Staphylococcus aureus*.

tion caused by the USA300 clone in a Korean resident, possibly acquired autochthonously.

Keywords: *Staphylococcus aureus*; Methicillin resistance; Community-acquired infections; Genotype

Conflict of interest

No potential conflict of interest relevant to this article is reported.

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