

Small colony variant-producing *S aureus* prosthesis joint infection highlighted by sonication and treated with prolonged high doses of daptomycin

Camille Piffaut,¹ Sébastien Lustig,^{2,3,4} Frédéric Laurent,^{1,2,4,5,6} Christian Chidiac,^{2,4,5,7} Tristan Ferry,^{2,4,5,6,7} on behalf of the Lyon BJI Study Group

¹Laboratoire de Bactériologie, Hôpital de la Croix-Rousse, Hospices Civils de Lyon, Lyon, France

²Université Claude Bernard Lyon 1, Lyon, France

³Service de Chirurgie Orthopédique, Centre Albert Trillat, Hôpital de la Croix-Rousse, Hospices Civils de Lyon, Lyon, France

⁴Centre Interrégional de Référence Rhône-Alpes Auvergne des Infections Ostéo-articulaires complexes, Lyon, France

⁵Centre International de Recherche en Infectiologie, CIRI, Inserm U1111, CNRS UMR5308, ENS de Lyon, UCBL1, Lyon, France

⁶Centre National de Référence des Staphylocoques, Lyon, France

⁷Service de Maladies Infectieuses et Tropicales, Hôpital de la Croix-Rousse, Hospices Civils de Lyon, Lyon, France

Correspondence to

Dr Tristan Ferry,
tristan.ferry@univ-lyon1.fr

DESCRIPTION

An 80-year-old woman with a history of β -lactam allergy was admitted for chronic knee prosthesis joint infection (PJI) (figure 1A). The prosthesis was removed and sonicated as previously described (400 ml of Ringer solution was added in a sterile box containing the explanted prosthesis, vortexing was performed before and after sonication in ultrasound bath, and then 100 μ l of sonicate fluid was plated onto aerobic and anaerobic medium and broth).¹ All peroperative samples revealed methicillin-susceptible *Staphylococcus aureus* in cultures, whereas the sonicate fluid culture yielded additional *S aureus* small colony variant phenotype (SCV) (figure 1B). Vancomycin (1 g/day intravenously) followed by rifampin (1200 mg/day orally) were started. As a rash with eosinophilia occurred, vancomycin and rifampin were switched to daptomycin 850 mg/day (9 mg/kg/day). Reimplantation, performed after a 6-week interval, did not reveal any bacterial growth in culture. Daptomycin was continued for a total duration of 3 months, with perfect clinical and biological tolerance. At 1-year follow-up, clinical and radiological outcomes were favourable (figure 1C).

S aureus, one of the most frequent aetiological agent of PJI, is associated with a high rate of relapse, partly explained by its capacity to produce biofilm and to convert into SCV, which is a slow-growing phenotype associated with intracellular persistence.²

Our case highlights that (1) sonication should help to isolate these phenotypic variants, actually underestimated due to fastidious growth requirements; (2) prolonged high dose (≥ 8 mg/kg/J) of daptomycin (considered as an alternative for the treatment of *S aureus* PJI at the standard dose of 6 mg/kg/J³) might be efficient in patients with chronic PJI due to SCV expressing *S aureus*. In fact, as it was demonstrated for rifampin (compromised in our case), recent studies pinpointed the antibiofilm activity of daptomycin. Its antimicrobial activity against SCV remained to be investigated.

Learning points

- ▶ Sonication may help to show small colony variant phenotype in *Staphylococcus aureus* chronic prosthesis joint infection.
- ▶ Daptomycin could be used for the treatment of *S aureus* chronic prosthesis joint infection.

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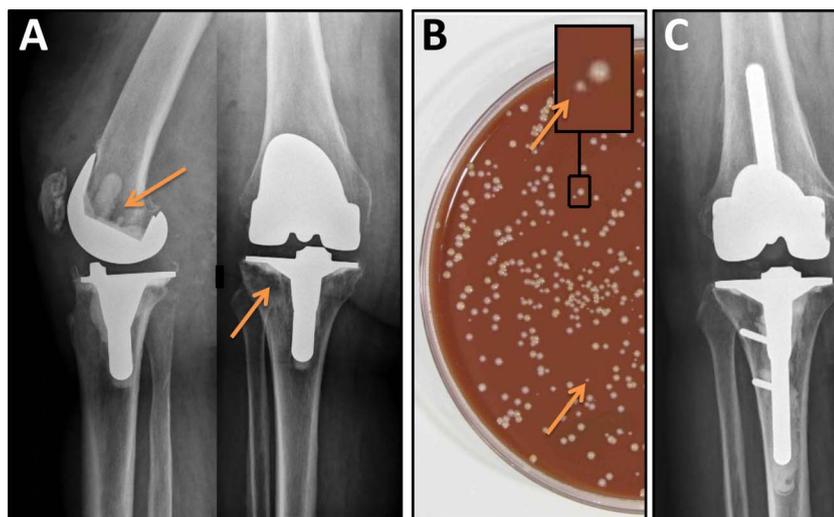


Figure 1 Periprosthetic pathological lucencies (A, arrows), associated with MSSA SCV in cultures (small colonies) obtained with sonication from prosthesis explantation (B, arrows). After reimplantation and a total of 3 months of antimicrobial therapy, no relapse occurred at 1 year (C, x-ray).

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Florent Valour, Christian Chidiac, Dominique Peyramond; *Surgeons*—Sébastien Lustig, Franck Trouillet, Philippe Neyret, Olivier Guyen, Gualter Vaz, Christophe Lienhart, Michel-Henry Fessy, Cédric Barrey; *Microbiologists*—Frederic Laurent, François Vandenesch, Jean-Philippe Rasigade; *Nuclear Medicine*—Isabelle Morelec, Emmanuel Deshayes, Marc Janier, Francesco Giammarile; *PK/PD specialists*—Michel Tod, Marie-Claude Gagnieu, Sylvain Goutelle; *Clinical Research Assistant*—Marion Martinez.

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