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Piseth Seng, Madou Traore, Jean-Christophe J.-C. Lagier, Jean-Philippe Lavigne, Albert Sotto, Michel Drancourt, Andreas Stein

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Staphylococcus lugdunensis: An Underreported Pathogen in Osteomyelitis



Dear Editor,

We read with great interest the recent report by Kear et al in the Journal (1). The authors presented a case of acute osteomyelitis of the foot involving *Staphylococcus lugdunensis* in a diabetic male patient with neuropathy. We agree that bone and joint infection involving *S. lugdunensis* is rare, and only 47 cases have been reported, including 33 cases of prosthetic joint infection, 9 cases of vertebral osteomyelitis with or without an orthopedic device, 4 cases of arthritis, and 2 cases of osteitis (2–9). However, we believe that cases of osteomyelitis involving *S. lugdunensis* are not so rare.

We performed a retrospective study of the 21 cases of osteomyelitis involving *S. lugdunensis* treated by our center between January 2002 and December 2013 (Table). The institutional research ethics board (Comité de Protection des Personnes Sud Méditerranée 1) approved the study (copies of the written approval are available for review by the Editor-in-Chief of the Journal). The mean age was 64 ± 14 (range 35 to 82) years, yielding a male/female ratio of 2. Fifty-seven percent of our patients had comorbidities, including diabetes mellitus and peripheral neuropathy, which were identified in 13 (62%) and 5 (24%) patients, respectively. Tobacco use and alcoholism were identified in 9 (43%) and 4 (19%) patients, respectively. One patient had a history of solid cancer and one a history of human immunodeficiency virus infection. Of the 21 cases of *S. lugdunensis* osteomyelitis, 14 (67%) were located in the foot, including 12 cases (57%) of diabetic foot osteomyelitis and 2 cases of nondiabetic foot osteomyelitis infection (1 of peripheral neuropathy and 1 of first metatarsophalangeal joint osteoarthritis after surgery for an ingrown toenail). Another 7 cases of *S. lugdunensis* osteomyelitis were located in the hand (2 cases), sacrum (2 cases), tibia (1 case), clavicle (1 case), and craniotomy (1 case). Purulent discharge, which occurred in 15 patients (71%), was the most frequent clinical symptom, followed by local inflammation in 14 (67%), pain in 8 (38%), and fever in 9 (43%). Bacteremia occurred in 1 patient (5%), and septic shock was recorded in 2 (9%). The cases of osteomyelitis involving *S. lugdunensis* included mixed infection in 18 (86%), which was commonly observed in patients with diabetic foot infection ($n = 10$; 56%). All *S. lugdunensis* isolates were susceptible to antistaphylococcal drugs, with the exception of 2 isolates that were resistant to methicillin and 4 isolates resistant to fosfomycin. Of the 21 patients, 16 (76%) were treated exclusively with oral antibiotics and 5 (24%) with oral antibiotics and an initial intravenous antibiotic. Also, 11 patients (52%) underwent a combination of surgery with antibiotic therapy, including surgical lavage and debridement in 4 (19%), amputation in 6 (29%), and bone flap removal in 1 (5%). The remaining 10 patients (48%) underwent antibiotic treatment alone, without surgery. The mean length of antibiotic treatment was 95 ± 43 (range 7 to 336) days. A total of 19 patients were evaluated at an average follow-up period of 8 ± 7 (range 1 to 23) months. Remission at 1 year after the end of treatment was recorded in 12 patients (63%). Two patients had died, one of cardiovascular failure and one of metastatic malignant transformation of a chronic skin wound. Relapse was observed in 5 patients (26%). The median interval to relapse was 50 (range 42 to 230) days after the end of treatment.

Table

Clinical characteristics, treatment options, and clinical outcomes of 21 cases of osteomyelitis with *Staphylococcus lugdunensis*

Variable	n (%)
Sex	
Male	14 (67)
Female	7 (33)
Comorbidities and risk factors	
Alcoholism	4 (19)
Tobacco use	9 (43)
Diabetes mellitus	13 (62)
Peripheral neuropathy	5 (24)
Solid cancer	1 (5)
Human immunodeficiency virus infection	1 (5)
Infection location	
Craniotomy	1 (5)
Clavicle	1 (5)
Diabetic foot osteomyelitis	11 (52)
Foot	14 (67)
Hand	2 (9)
Sacrum	2 (9)
Tibia	1 (5)
Clinical and biologic signs	
Purulent discharge	15 (71)
Local inflammation	14 (67)
Pain	8 (38)
Fever	9 (43)
Bacteremia	1 (5)
Severe sepsis	2 (9)
Protein reactive C rate ≥ 40 mg/mL	11 (52)
Polymicrobial infection	18 (86)
Surgical treatment	
Surgical lavage and debridement	4 (19)
Amputation	6 (29)
Bone flap removal	1 (5)
Antibiotic treatment	
Oral antibiotic only	16 (76)
Oral antibiotic with initial intravenous antibiotic	5 (24)
Oxygen therapy	
	2 (9)
Clinical outcomes	
Lost to follow-up	2 (9)
Remission	12 (63)
Death (cause)	2 (10)
Relapse	5 (26)

Cases of osteomyelitis caused by *S. lugdunensis* currently appear to be underreported. Nevertheless, we identified 21 cases in only 2 hospital centers in the area of Marseille and Nimes. The relapse rate was high, although all isolates were susceptible to antibiotics. Relapse did not appear to be related to any specific risk factor or to polymicrobial infection. Treatment strategies (molecules of antibiotics, a combination of antibiotics, and the duration of antibiotic therapy) appeared to have no effect on the clinical outcomes in our study. Physicians should be aware of the possibility of osteomyelitis due to *S. lugdunensis*. Relapse appears to be frequent and has not yet been explained by antibiotic resistant or specific virulence factors such as another staphylococci infection. We believe that increasing the description of this pathogen in osteomyelitis should enable a better understanding of the pathogenesis of this bacterium and a better definition of the treatment strategies.

Piseth Seng, MD, PhD

Clinical Infectious Disease Specialist

Centre de Référence des Infections Ostéo-Articulaires

Interrégional Sud-Méditerranée

Service des Maladies Infectieuses

Centre Hospitalo-Universitaire de la Conception

Marseille, France; and
Aix-Marseille Université
Faculté de Médecine
Marseille, France

Madou Traore, MD
Clinical Infectious Disease Specialist
Centre de Référence des Infections Ostéo-Articulaires
Interrégional Sud-Méditerranée
Service des Maladies Infectieuses
Centre Hospitalo-Universitaire de la Conception
Marseille, France

Jean-Christophe Lagier, MD, PhD
Clinical Infectious Disease Specialist
Aix-Marseille Université
Faculté de Médecine
Marseille, France

Jean-Philippe Lavigne, MD, PhD
Professor of Microbiology
Laboratoire de Bactériologie
Virologie, Parasitologie
Centre Hospitalo-Universitaire de Nîmes
Nîmes, France

Albert Sotto, MD, PhD
Professor of Infectious Disease
Service des Maladies Infectieuses et Tropicales
Centre Hospitalo-Universitaire de Nîmes
Nîmes, France

Michel Drancourt, MD, PhD
Professor of Microbiology
Aix-Marseille Université
Faculté de Médecine
Marseille, France

Andreas Stein, MD, PhD
Professor of Infectious Disease
Centre de Référence des Infections Ostéo-Articulaires
Interrégional Sud-Méditerranée
Service des Maladies Infectieuses
Centre Hospitalo-Universitaire de la Conception
Marseille, France; and
Aix-Marseille Université
Faculté de Médecine
Marseille, France

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Re: Is Subtalar Joint Cartilage Resection Necessary for Tibiotalocalcaneal Arthrodesis via Intramedullary Nail? A Multicenter Evaluation



Dear Editor:

We write with regard to the report from Mulhern et al (1) entitled “Is Subtalar Joint Cartilage Resection Necessary for Tibiotalocalcaneal Arthrodesis via Intramedullary Nail? A Multicenter Evaluation.” We have concerns with the review of the published data and the method and conclusions drawn by the authors. Our concerns are as follows:

1. In their report, the authors cited a total of 4 articles describing “TTC [tibiotalocalcaneal] fusion with formal preparation of the ankle joint but not the subtalar joint, with good outcomes.” The citation of 4 publications might suggest that this surgical technique is endorsed by other foot and ankle surgeons. However, this is not correct. Two studies were cited in the introduction section (original references 8 and 9) (2,3). The report by Rammelt et al (2) was of a multicenter study that analyzed the outcomes of tibiotalocalcaneal fusion in 38 patients at an average follow-up period of 2 years. In the description of the surgical procedure, the authors clearly stated “The ankle and subtalar joint were debrided completely of remaining cartilage and all sclerotic or necrotic bone” (2). The other report, by Thomas et al (3) was a review highlighting the indications, contraindications, surgical technique, and possible complications of using intramedullary nails in tibiotalocalcaneal arthrodesis. In the section describing the surgical procedure, the authors stated “Articular surfaces are prepared by removing all remaining cartilage and perforating the subchondral bone with multiple drill holes or by shingling, using a small osteotome.” The other 2 studies were cited in the discussion section (original references 1 and 4) (4,5). The report by Gross et al (4) was a retrospective review of 30 patients who underwent tibiotalocalcaneal arthrodesis. In their description of the surgical technique, the authors stated they “did not use subtalar resections of bone and fibrosis tissues,” but noted that their fusion rate of the subtalar joint was only 74%. More importantly,