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## Unusual case of spondylodiscitis due to *Staphylococcus saccharolyticus*

Keywords: *Staphylococcus saccharolyticus*; Spondylodiscitis; Anaerobe; *rpoB*

### 1. Case report

A 58-year-old man was hospitalized in August 2002 in the rheumatology department of the Montpellier University Hos-

pital for dorsal pain of 2 months duration, fever, and weight loss. No underlying diseases were noted for this patient. For 2 months before its admission, he had been treated with non-steroidal anti-inflammatory drugs and corticosteroids, without any improvement in his condition. On admission, the patient was febrile (38 °C). Physical examination revealed a point tenderness in the area overlying his dorsal spine and contracture of the paraspinal muscles was noted. Neurological examination and lung auscultation were unremarkable. No symptoms of endocarditis were detected. Oropharyngeal examination disclosed poor oral hygiene, with gingivitis and carious teeth. Laboratory evaluation revealed an erythrocyte sedimentation rate of 71 mm/h, a C-reactive protein (CRP) value at 75 mg/l, and a white blood cell count of  $13.5 \times 10^9$  cell/l with 85% polymorphonuclear leukocytes. Blood and urine cultures were negative. Serodiagnosis for HIV, *Brucella* and hepatitis C virus infections were negative. Transthoracic echocardiogram showed no valvular vegetations. Magnetic resonance imaging (MRI) of the dorsal spine revealed spondylodiscitis at the seventh and eighth dorsal vertebra disk space, with obliteration of normal fat planes in surrounding paravertebral soft tissues. A computed tomography-guided biopsy of the intervertebral disk was performed. Direct Gram staining did not reveal any bacteria. Disk biopsy culture yielded a pure culture of *Staphylococcus saccharolyticus* after 5 days of incubation in anaerobic conditions. The aerobic cultures remained negative after 7 days. Stains for acid-fast bacilli as well as mycobacterial cultures were negative. The clinical isolate was identified as *S. saccharolyticus* by using the API 20A strip (bioMérieux, Marcy l'Etoile, France) (99.7% probability). However, due to an atypical lack of acid production from trehalose of the strain and to the unusual recovery site for this species, molecular identification of the strain by 16S rDNA and *rpoB* gene sequencing was decided on [1,2]. Analysis of 16S rDNA sequence revealed more than 99% of homology with four *Staphylococcus* species, confirming only the identification to the genus level. In contrast, *rpoB* gene sequencing allowed undoubted identification of the isolate as *S. saccharolyticus* since the maximum of homology was observed with *S. saccharolyticus* CIP 103275<sup>T</sup> (98.3%) (accession number AF325871) and then with *Staphylococcus caprae* CIP 104000<sup>T</sup> (AF325868) (88.9% of homology). Antimicrobial susceptibility testing by disk diffusion assay showed that the isolate was susceptible to vancomycin, teicoplanin, erythromycin, pristinamycin, rifampin and tetracycline. The MICs of ofloxacin ( $\leq 0.19$  µg/ml), clindamycin ( $\leq 0.064$  µg/ml) and metronidazole ( $\geq 256$  µg/ml) were determined by the E-test method. Beta-lactamase production was not evidenced using nitrocefin reagent and no amplification product corresponding to the *mecA* gene was detected by PCR. The patient was given an empirical intravenous treatment of cefotaxime (2 g four times daily) and fosfomicin (4 g three times daily) for 2 weeks. The patient remained febrile and developed a general erythematous rash. The treatment was switched to oral administration of ofloxacin (200 mg three times daily) and clindamycin (600 mg four times daily) for

12 weeks. MRI performed 3 months after initiation of treatment demonstrated resolution of edema at the D7 and D8 vertebral bodies and corresponding intervertebral disk. The CRP level was undetectable 3 months after discontinued of treatment and the patient was able to resume a full range of activities. Follow-up at 1 year was favorable.

## 2. Discussion

*Staphylococcus saccharolyticus*, formerly *Peptococcus saccharolyticus*, is the only anaerobic species within the genus *Staphylococcus*. Although it takes part of the bacterial flora of normal human skin [3], *S. saccharolyticus* remains an unusual cause of infectious disease, previously implicated in only two cases of endocarditis. A case of native valve endocarditis was first reported in a 61-year-old man [4]. *S. saccharolyticus* was recovered from three blood cultures after 10 days of incubation. The second case was a prosthetic valve endocarditis in a 57-year-old woman. *S. saccharolyticus* was isolated from blood cultures after 24 h and from prosthetic mitral valve [5]. In these two cases, no obvious portal of entry could be clearly identified. Additional isolates have been reported, mainly from blood cultures and pancreatic fluid collections [6,7], but in these cases, the available clinical data were not contributive enough to establish the clinical implication of the strains. Thus, this case is the first that documents *S. saccharolyticus* as the sole cause of spondylodiscitis and is the third case of clearly established human infection due to *S. saccharolyticus*. Usefulness of *rpoB* gene sequencing, a recently developed tool for accurate identification of *Staphylococcus* species [2], is also underlined herein. In the present case, *S. saccharolyticus* was considered to be the etiologic agent of the infection on the basis of its presence at the site of infection in pure culture and the absence of concomitant pathogenic organisms. Moreover, the patient responded symptomatically to the antimicrobial treatment and a decline of CRP level and MRI normalization were observed. When bacterial growth is obtained from infected intervertebral disks, *Staphylococcus aureus* is the Gram-positive coccus recovered in the majority of the cases. More rarely, coagulase negative staphylococci, mainly *Staphylococcus epidermidis*, have been implicated in such infections [8]. Anaerobic bacteria were also recovered from adults and children with discitis [8,9] and the genera mainly involved are *Peptostreptococcus*, *Propionibacterium*, *Bacteroides*, and *Fusobacterium*. *S. saccharolyticus* should be added to the list of microorganisms that are able to cause spondylodiscitis. Once more, the need and importance of anaerobic cultures when dealing with infective pathology of the spine is stressed. In the present case, the source of infection remained unknown and no underlying diseases were noted, but the glucocorticoid treatment could have favored the infectious process. The premature stopping of the therapy with cefotaxime and fosfomycin has not enabled to estimate its efficiency but the combination of ofloxacin and clindamycin, which is considered as a good

alternative for treatment of bone infections [10], was very effective in this case.

Finally, we describe the first case of spondylodiscitis caused by *S. saccharolyticus*. This confirmed the pathogenic potential of *S. saccharolyticus*, which could be an underestimated pathogen due to its anaerobic growth up to 10 days [4].

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## Hydatid synovitis revealed by an acute monoarthritis of the knee

**Keywords:** Hydatid cyst; Joint; Echinococcosis; Synovitis

### 1. Introduction

Hydatid disease (echinococcosis) is a zoonosis produced by the larval stage of *Echinococcus granulosus*, and it is most prevalent in some areas of North and South Africa, South America, Australia and Canada [1]. Cysts may develop in various viscera particularly in the liver and the lungs. Involvement of the musculoskeletal system is unusual. Echinococcal joint disease is exceptional and is usually secondary to adjacent bone disease.

### 2. Case report

We report the case of a patient with primary and isolated echinococcal synovitis.

A 63-year old woman, without history of knee pathology, has developed for a month a painful swelling of the right knee

with functional impairment. On physical examination the right knee was swollen, hot and painful. Examination revealed a limitation of the movement ( $15^\circ/70^\circ$ ). Laboratory studies showed an erythrocyte sedimentation rate (ESR) of 106 mm/h, hemoglobin value of 11.2 g/dl, a leukocyte count of  $6700/\text{mm}^3$  and an eosinophil count of  $800/\text{mm}^3$ .

Synovial fluid examination showed an absolute cellular count of  $30000/\text{mm}^3$  with 73% polymorphonuclear leukocytes, 27% lymphocytes and negative results of aerobic bacteria. Because of the presence of an unspecified chronic monoarthritis, a synovial biopsy was performed and showed a hypertrophic synovia, largely ulcerated, with a heavy neutrophilic and lymphocytic infiltrate associated to a foreign body-type giant cell reaction to remains of fragments of the germinal membrane (Fig. 1). Radiography of the right knee was normal. CT scan of the knee revealed a 2 cm multilocular cystic lesion involving the right knee synovia with soft tissue extension at the expense of solar muscle. There was no bone lesion (Fig. 2). Findings of the abdominal scan and chest X-ray were normal. The results of echinococcus's serology were positive by Elisa and indirect hemagglutination.

A surgical excision of the cyst and a synovectomy was performed (Fig. 3) and the articular cavity was sterilized with  $\text{H}_2\text{O}_2$ . Bone surgical biopsy of the posterior side of the tibia in contact with the cyst was negative. No medical treatment

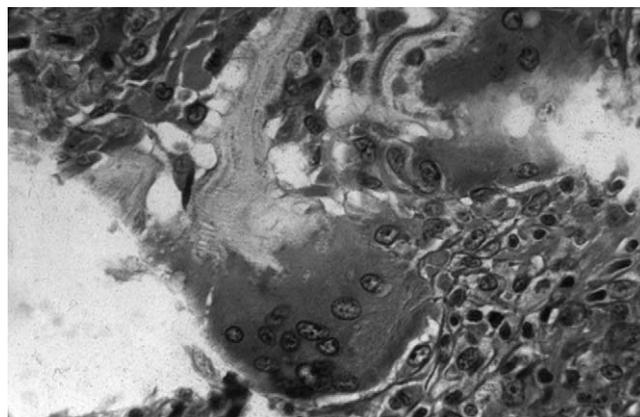


Fig. 1.

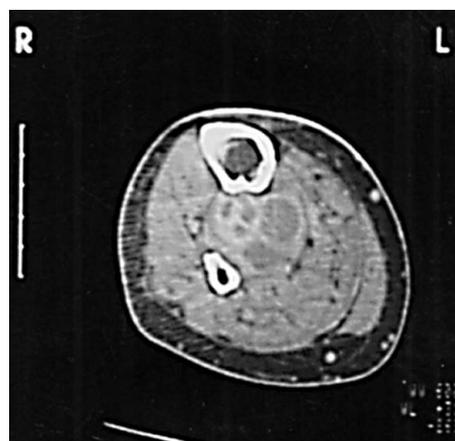


Fig. 2. CT Scan right knee: multilocular cystic lesion.