

# Espondilodiscite e endocardite a *enterococcus faecalis*

## *Spondylodiscitis and endocarditis caused by enterococcus faecalis*

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### Resumo

Os autores descrevem o caso clínico de uma mulher de 69 anos, que recorreu ao Serviço de Urgência por queixas persistentes de dor lombar e febre com 3 meses de evolução. Tinha antecedentes de cirurgia a meningioma dorsal cerca de 5 meses antes. O diagnóstico de espondilodiscite foi estabelecido por ressonância magnética da coluna lombar. Nos exames microbiológicos efectuados foi isolado *Enterococcus faecalis*. Foi ainda detectada endocardite da válvula aórtica. Medicada com antibioterapia dirigida prolongada, a evolução foi favorável.

A associação de espondilodiscite e endocardite pode ocorrer em cerca de 15% dos casos de endocardite infecciosa. Apesar da infecção a *Enterococcus faecalis* ser uma das causas mais frequentes de endocardite, a associação entre espondilodiscite e endocardite devidas a este microorganismo é surpreendentemente rara.

Palavras-chave: infecção enterocócica, espondilodiscite, endocardite-

### Abstract

*The authors describe the clinical case of a 69-year-old woman admitted in the emergency department with a 3 months history of persistent lumbalgia and fever. A dorsal meningioma surgery had been performed 5 months before admission. Spondylodiscitis was diagnosed by lumbar spine magnetic resonance. Enterococcus faecalis was identified in several cultured samples. Aortic valve endocarditis was also detected. After a long treatment with appropriate antibacterial agents the evolution was favorable.*

*The association of spondylodiscitis with endocarditis occurs in about 15% of endocarditis cases. Being Enterococcus faecalis infection a frequent cause of endocarditis, the association of spondylodiscitis with endocarditis due to this microorganism is surprisingly rare.*

*Key words: enterococcal infection, spondylodiscitis, endocarditis.*

### INTRODUCTION

Vertebral osteomyelitis, also called spondylodiscitis (SD), occurs more often by three mechanisms: the more prevalent - hematogenous dissemination, direct inoculation at the time of surgery to the spine and spreading from a contiguous infection to the soft tissues.<sup>1</sup> Therefore, in most cases, prolonged bacteremia emerges, with the infection hematogenous dissemination, which is in the origin of the SD. In this context, is therefore important to identify the primary foci of this infection, that can be the infectious endocarditis (IE), a skin and soft tissues infections, frequent in drug addicts, the infection of a vascular access, the genitourinary tract infections, bursitis or septic arthritis among others. IE is effectively detected in half of a third of SD cases.<sup>1</sup>

On the other hand, SD is usually more symptomatic than IE, but it should not neglect the need to research concomitant IE, which might not be symptomatic.<sup>2</sup>

Muscular-skeletal complaints, as arthralgia, myalgia or lumbar pain, are very frequent in IE cases, although only in a small percentage true osteoarticular infections have been reported.<sup>3</sup>

The *Enterococcus faecalis*, the third most frequent cause of IE, after Streptococcus and Staphylococcus, rarely causes of osteoarticular infections.<sup>3,4</sup> In the same sense, it has been verified that *Enterococcus faecalis* is a rare cause of SD associated with IE.<sup>2</sup> However, it has been seen a growing increase of enterococci bacteremia, often in a nosocomial context, associated with severe underlying disease, invasive procedures and intravascular devices.<sup>5</sup>

### CASE REPORT

Female patient, 69 years of age, Caucasian, housewife, resident in Costa da Caparica. About five months before the current hospitalization, she had undergone

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Magnetic resonance image revealing suggestive aspects of spondylodiscitis L4–L5, highlighted by hypersignal on STIR weighting and disc hypersignal in T2 weightings.

FIG. 1

a surgery for a bulky meningioma of the dorsal spine, at D5 level, with the tumor resection and D5-D6 laminectomy. Two months after surgery, incapacitating and progressive lumbar pain started irradiating to the left lower limb, restricting the walking. Shortly afterwards, fever of evening predominance, chills, night sweating, asthenia and anorexia emerged. He came to the emergency service three times, where he was told that he was suffering of urinary infection and medicated with antibiotics with a name he did not know. Due to a deterioration of complaints and persistence of high fever (39-39.5°C) he went again to the emergency service.

In the personal background there was only worth of mention arterial hypertension. She denied pulmonary tuberculosis, diabetes mellitus, existence of epidemiologic factors as intake of fresh cheese, contact with pets, mentioning to live in a house with sanitary conditions. The family background was irrelevant.

On the observation the patient had an axillary temperature of 38°C, BP 150-61 mmHg, pulse 88/min, rhythmic, body mass index 24. She was aware, lucid, hydrated, without jugular ingurgitation at 45°; without palpable adenomegalies, without changes in the pulmonary auscultation; the cardiac auscultation has detected a meso- proto systolic murmur grade II/VI in the main aortic focus, without apparent irradiation;

the abdomen was soft and depressible, painless without organomegalies or palpable masses, without hepato-jugular reflux; the column was painful to palpation in the lumbar region; there was no edema of the lower limbs and peripheral pulses were all palpable. The neurologic exam has detected a bilateral positive Laségue's sign, more evident on the left, reduction of the lower limbs muscular strength (grade 4), reduction of the osteotendinous reflexes, indifferent cutaneous-plantar reflexes, tactile and pain sensitivity reduced in both legs, more marked on the left and without level of sensitivity.

The initial analytical evaluation has revealed hemoglobin 9.9 grams/dL; hematocrit 28.7%; erythrocytes 3.330.000/mm<sup>3</sup>, leukocytes 6.400/mm<sup>3</sup> (neutrophils 68.5%, eosinophils 0.4%, basophils 0.5%, lymphocytes 22.4%, monocytes 8.2%), platelets 296.000/mm<sup>3</sup>, fibrinogen 587 mg/dL, erythrocyte sedimentation rate (ESR) 84 mm in the 1<sup>st</sup> hour, C protein reactive (CPR) 6,3 mg/dL, glycemia 99 mg/dL, urea 33 mg/dL, creatinine 0.7 mg/dL, aspartate aminotransferase 15 U/L, alanine aminotransferase 10 U/L, normal serial ionogram and urinary sediment only with a discreet hemoglobinuria. There were no significant changes in the electrocardiogram or the thorax radiogram.

Given the clinical context, more precisely when referring to a patient with a recent surgery to the spine, suffering of prolonged fever and a pain of radicular type, localized to the lumbar spine, which was also painful to palpation, the hypothesis of spondylodiscitis, had to be ruled out. In this sense, it was asked a nuclear magnetic resonance (NMR) of the dorsal and lumbar-sacral spine confirming signs of spondylodiscitis L4-L5, a part of the post-surgical aspects in D5-D6, without evidence of residual tumoral lesion (Fig. 1). 3 serial hemocultures were carried out, having all isolated *Enterococcus faecalis* sensitive to ampicillin and gentamicin. The uroculture has detected *Enterococcus faecalis*, also sensitive to ampicillin and gentamicin. It was also performed aspiration puncture of the disc lesion, which culture revealed *Enterococcus faecalis* with the same antibiotic sensitivity. The patient received ampicillin in the dose of 2 grams 4/4 hours endovenous and gentamicin, controlled with peaks and valleys of gentamicin in the blood, during 8 weeks. It was also performed a transesophageal echocardiogram (TEE) detecting adherent vegetation at the ventricular face of the left coronary layer and non-coronary of the aortic valve, conditioning the destruction of the layers with

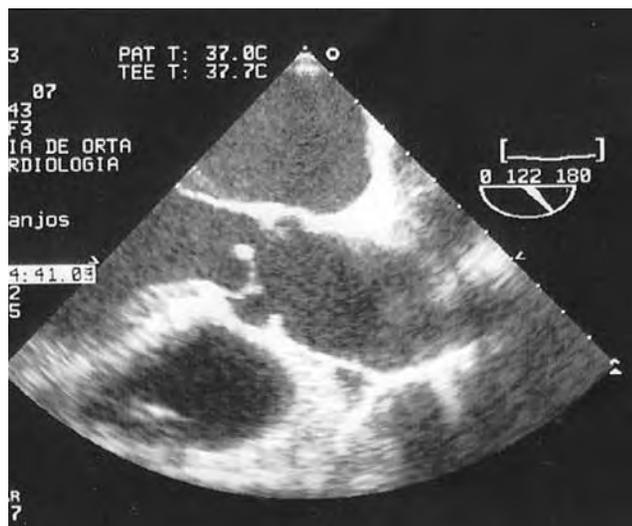


Image of transesophageal ultrasound highlighting compatible echogenic images with vegetation, adhering to the ventricular face of the left coronary leaflet and non-coronary of the aortic valve.

FIG. 2

severe aortic insufficiency (vena contracta of 0.7 cm; ratio regurgitating jet/exit tract of 90%). The remaining valve structures had no significant changes, namely vegetation, without identifying masses or thrombi, and the left ventricle is not dilated and is working properly (Fig. 2 and 3).

The patient also received nifedipine, captopril, non-steroid anti-inflammatory drugs and painkillers, as well as lumbar spine immobilization.

Apyrexia on the 5<sup>th</sup> day was seen with a progressive improvement of pain complaints, enabling walking in the ward from the 2<sup>nd</sup> week onwards. She has never presented signs or symptoms of heart failure.

It was also seen a marked laboratorial improvement, with ESR decrease (38 mm in the 1<sup>st</sup> hour) and CRP (1.1 mg/dL). NMR for the lumbar spine was repeated revealing a light improvement on the 5<sup>th</sup> week. The control ETE, on the 4<sup>th</sup> week, has revealed a marked improvement regarding the previous test, with vegetation disappearing, moderate aortic failure and light mitral insufficiency.

She was discharged by the end of 8 weeks of treatment, being followed then as outpatient. The 3<sup>rd</sup> NMR of the lumbar spine has revealed only residual aspects of the inflammatory process. Three years after being followed as an outpatient, she still is asymptomatic, stable both clinically and laboratory. She is also being



Image of transesophageal ultrasound highlighting a destruction of the left coronary leaflet and the non-coronary of the aortic valve conditioning a severe aortic failure.

FIG. 3

followed as a Cardiology outpatient in order to monitor the aortic valve insufficiency, which is stable.

## DISCUSSION

Osteoarticular infections by *Enterococcus* are rare, with few cases described in literature. Such particularity emerges from the *Enterococcus* virulent factors, in particular adhesion molecules, which are part of its cellular wall and present a particular tropism for the cardiac valves for renal epithelial cells, what does not happen regarding the bone.<sup>3,4,6</sup>

SD corresponds to an inflammation of the intervertebral disc usually associated with osteomyelitis of the adjacent vertebra. *Staphylococcus aureus* accounts by half of cases of pyogenic SD, although the gram negative enteric bacilli were prevalent, in around 25% of cases, namely after an instrumentalization of the urinary route. Other agents can emerge in particular groups of patients. In spite of the more frequent infection route being the hematogenous, in the current case report, as the patient underwent a recent surgery to the vertebral spine, it could be in cause the direct inoculation during surgery. However, the fact of having isolated the same agent in uroculture can indicate that the primary source of infection had been the urinary

tract. It is still arguable in this case report, the fact of dealing with nosocomial infection or associated with healthcare, conversely to community acquired infection. Considering the previous surgery with hospital admission lower than three months before the onset of symptoms, it can be considered as the most likely the infection associated with healthcare. However, bacteremia by *Enterococcus faecalis* complicated by IE is more often found in community acquired infections. Conversely, in a hospital context, bacteremia by *Enterococcus* is included in polymicrobial bacteremia.<sup>7</sup>

It was however compulsory, an aspect still reinforced by positive hemoculture for gram positive agent, to investigate IE coexistence, which was confirmed afterwards.

The lumbar localization of the SD lesion is the most frequent. As it has been described in literature, in particular when the path of the infectious spreading is hematogenous, the patient presented two adjacent vertebral bodies involved, an aspect that is explained by the fact of the segmentary arteries which irrigate the vertebra bifurcate, originating two terminal arteries for two adjacent vertebra.<sup>3</sup>

The insidious presentation form of the disease is relatively common, dominated by pain complaints at level of the lumbar spine, more often affected, but sometimes at dorsal and cervical level, although this more rarely. The fever, in spite of frequent is more inconstant. In the case reported described should be referred that the insidious progression can contribute to a later diagnosis, being likely that a higher degree of clinical suspicion would help to get an earlier one. The endocarditis by *Enterococcus faecalis* has a characteristically subacute presentation, being the left heart most often affected, as it was verified in the present case reaching the aortic valve system.<sup>6</sup> Worth mentioning that in the context of IE by this agent, that metastatic infections are rare.

Being the spine NMR the additional test of choice for the SD diagnosis, as it was performed in the mentioned clinical case, in the presence of contraindication for such test, as the existence of corporal metallic implant, the scintigraphy with Gallium-67 and Tomography of Positron Emission with fluorodeoxyglucose are also very sensitive and specific exams for vertebral SD.<sup>1,8</sup>

The treatment for IE by *Enterococcus* leads to double endovenous antibiotherapy, with an antibiotic with action on the cellular wall (penicillin, ampicillin or vancomycin) associated with aminoglycoside, with

synergistic activation, during 4 to 6 weeks.<sup>9</sup> In the described clinical case, the IE treatment with directed antibiotherapy succeeded well, with even ultrasound regression of aortic valve insufficiency and vegetation disappearing. During the hospitalization, there was never a surgical recommendation, as severe heart failure, recurring embolism or formation of valve abscesses.

The SD treatment, performed with the same antibiotic scheme, was more prolonged, due to the risk of recurrences. There is not yet a consensus on the duration of the treatment, which can vary from 6 to 8 weeks up to three months, and the more prolonged treatments should be considered in complicated cases with non-drained abscesses, or associated with surgical implants in the spine.<sup>8</sup> Surgery is necessary in a restricted group of SD patients, having three clear recommendations: disease progression in spite of the appropriate antibiotic therapy; spine compression due to a vertebral collapse or spine instability; drainage of epidural or paravertebral abscess.<sup>1,2,3,5,8</sup>

The spine NMR presents a weak correlation with the clinic, reason why the patients monitoring with SD should be correlated with ESR and CPR, concomitant to symptomatic improvement.<sup>1,2</sup> ■

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