Case report

Vertebral osteomyelitis combined streptococcal viridans endocarditis

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Abstract

Endocarditis may be difficult to diagnose in patients with osteomyelitis in an early stage because they usually are treated for fever, bone pain and stiffness in the outpatient department. Herein we report an uncommon patient who developed severe lower back pain sustained for 2 months, and streptococcal viridans infected vertebral osteomyelitis combined endocarditis were diagnosed and cured.

Keywords: Osteomyelitis; Endocarditis; Streptococcal viridans

1. Introduction

Osteomyelitis is thought to be a complication of infectious endocarditis (IE) in as many as 6% of cases of endocarditis [1]. But IE may be difficult to diagnose in patients with osteomyelitis because the patients always focus on the symptoms of bone pain and stiffness. Hence, physicians need to have a high index of suspicion to avoid missing this important complication. Herein we report a patient with alcoholism who developed severe backache and intermittent fever sustained for 2 months. Spinal stenosis was considered and treated initially, however, vertebral osteomyelitis and infectious endocarditis with mitral vegetation were finally diagnosed and cured.

2. Case report

A 60-year-old man with alcoholism presented himself to our orthopedist complaining of lumbar backache for 1 month duration. One month earlier he received a dental extraction. During this period, general malaise, body weight loss, and intermittent fever also occurred but he was treated in local clinics as for a common cold.

Initially, he received a magnetic resonance imaging (MRI) study with contrast of L-spine for suspected neurological claudication and failed symptomatic therapy. Because the MRI demonstrated suspicious ongoing infectious process of L-spine, he was admitted for further evaluation.

On admission, the patient complained of unbearable back pain when standing. On physical examination, he was not febrile but he had anemic conjunctivas and a grade II/VI systolic mitral murmur. Neurological study showed hyper-reflexia but without extensor plantar responses of both feet.

Laboratory findings were as follows: hemoglobin 7.5 g/dl (mean corpuscular volume 90.7 fl), leukocyte count 10 700/mm³ (84% segmented neutrophils, 12% lymphocytes) and platelet count 227 000/mm³. Erythrocyte sedimentation rate (ESR) was more than 100 mm/hour (normal <20 mm/hour) and C reactive protein (CRP) was 11.22 mg/dl (normal <0.8 mg/dl). The Tc-99m methylene diphosphonate whole body bone-scan revealed increased radioactivity over the upper cervical spine, L2–3 and L4–S1 spine (Fig. 1).

On day 2 after admission, he was pyrexial. Cultures of blood, urine and sputum were sampled. Empirical antibiotics with parenteral cefazolin (1.0 g 8 h) and gentamicin (80 mg 12 h) were initiated. A computed tomograph guided vertebral biopsy with culture was done. The histology demonstrated mixed acute and chronic osteomyelitis, while the bone culture showed no growth of bacteria.

On day 4, the blood culture revealed growth of gram-positive cocci. The final report confirmed the growth of penicillin-sensitive streptococcus viridans, so the cefazolin was shifted to parenteral penicillin G (4 million units 4 h). A transthoracic echocardiogram was done for his louder murmur and bacteremia, and it showed vegetation in the mitral leaflets with severe regurgitation.

Gentamicin was discontinued on day 13 for his poor
intake and decreased urinary output. A transesophageal echocardiogram was done for the failed treatment, and it showed a larger oscillating-vegetation (2.0 × 1.0 cm in size) over the atrial side of the mitral valve (Fig. 2). So urgent mitral valve replacement with a 33 mm porcine valve was performed on day 16.

Postoperative recovery was uneventful and the severe backache subsided dramatically and quickly. After 6 weeks of intravenous penicillin G treatment, he was discharged and he was well without any medication at the time of writing.

3. Discussion

Musculoskeletal symptoms are found in 23–44% of patients with bacterial endocarditis, and lower back pain was the most common complaint [2–6]. However, lower back pain is a common presenting problem of patients seen in the outpatient department or even in the emergency department. So the physicians who see such patients should include endocarditis and pyogenic vertebral osteomyelitis in their differential diagnosis [2].

Although the incidence of musculoskeletal complaints remains high among patients with IE, osteomyelitis is thought to occur in only 2–6% of cases of endocarditis [1,3,4]. It appears that osteomyelitis is more common in the intravenous drug abusers than non-drug abusers [7]. For this case, alcoholism and inappropriate antibiotic prophylaxis for dental extraction should be the predisposing factors.

In the majority of pyogenic vertebral osteomyelitis, the primary route of infection appears to be hematogenous spread secondary to a bacteremia. The routes are thought to be the arterioles within the vertebral metaphyseal region or the valveless paraspinous venous plexus (Batson’s plexus veins) [8]. The most common source of identifiable infection include the genitourinary tract (29%), followed by soft tissue infection (13%), the upper respiratory tract (11%), and with increasing incidence in the intravenous drug abuse (1–2%) [8]. Theoretically, a state of constant bacteremia is an excellent cause of osteomyelitis or endocarditis, but we cannot completely define their occurrence sequence.

*Staphylococcus aureus* and *Staphylococcus epidermidis* account for 60–90% of cases of isolated osteomyelitis and approximately 30% of cases of IE. So invasive organisms such as *S. aureus* are thought to result in a higher incidence of osteomyelitis with IE [1,3,5]. Viridans and group D streptococci, although commonly seen in infective endocarditis, are rarely associated with metastatic suppurative complications such as osteomyelitis [2,9,10]. However, in review of previous reports [2,5,9], of particular importance is the common occurrence of severe lower back pain in cases of streptococci infected vertebral osteomyelitis, and it was also shown in our patient.

Recommended antibiotic regimes range in total length from 4 weeks to 6 months [1–4,9–10]. Generally, in strep-
tococci infected cases, because of their lesser virulence, 4–6 weeks of parenteral antibiotics is commonly advocated. In more invasive organisms infected cases, 3–6 months of oral antibiotics followed by 6 weeks of parenteral antibiotics are suggested.

In conclusion, the diagnosis of endocarditis and vertebral osteomyelitis should be considered in any patient with recent onset severe lower back pain, fever and heart murmur, especially if the patient is found to have a leukocytosis, elevated ESR or CRP.

References