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Spontaneous spondylodiscitis: presentation, risk factors, diagnosis, management, and outcome☆

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Spondylodiscitis;
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Magnetic resonance imaging;
Diabetes mellitus;
Staphylococcus aureus

Summary
Background: Spontaneous spondylodiscitis is an uncommon disease, which may result in serious complications with potentially high morbidity and mortality. We conducted a prospective case study over a 2-year period in order to analyze the clinical features, approaches to management, and outcome of spondylodiscitis.
Methods: Eight consecutive patients (four men, four women; age range 53—82 years) suffering from spondylodiscitis were identified during the study period. Parameters recorded included: demographics, past medical history, predisposing factors, presenting signs and symptoms, spinal level and extension of the infection, laboratory indices of inflammation, microbiological testing, radiological assessment, kind and duration of treatment, follow-up magnetic resonance imaging (MRI) studies, and outcome.
Results: Duration of symptoms varied from 14 to 90 days. All patients had back pain; fever $\geq$38 °C was present in 5/8 (62.5%) and neurological findings in 6/8 (75%). Diabetes mellitus was identified in six (75%). Most of the patients had elevated laboratory markers of inflammation. At the initial MRI, 12 anatomical levels were found. The microorganism was identified in 7/8 by blood or bone marrow cultures (50% *Staphylococcus aureus*). None of the patients underwent surgical intervention. Seven patients (87.5%) recovered to full activity; follow-up MRI study results were not always in parallel with the clinical improvement of patients.
Conclusions: Spontaneous spondylodiscitis should be considered in every patient with back pain accompanied by fever and laboratory markers of inflammation. The major predisposing risk factor seems to be uncontrolled diabetes. MRI appears to be the method of choice for confirming

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diagnosis. Timely and accurate diagnosis along with prompt administration of antibiotics appears mandatory for a favorable outcome and avoidance of surgical intervention.

Introduction

Infectious spondylodiscitis, or septic discitis, is an uncommon infectious condition in which symptoms may be non-specific, including fever, local tenderness, and neurological signs when deformity of the affected structures has developed.[1,2] The course may be acute or chronic, but the lack of specific symptoms usually results in delayed diagnosis leading to potentially high morbidity and mortality.[3] In most cases the affected patients have one or more predisposing underlying conditions, such as diabetes mellitus, alcoholism, HIV infection, a spinal abnormality or intervention, or a potential local or systemic source of infection.[3,4]

The aim of the present prospective study was to determine the whole spectrum of spondylodiscitis, including the clinical manifestations of the disease, the underlying risk factors, and the diagnostic work-up required to reach a timely and correct diagnosis, as well as the management, follow-up, and the outcome of a consecutive series of eight patients who were admitted to the Department of Medicine of the Medical School, University of Thessaly, Central Greece over a 2-year period (2005—2007).

Materials and methods

During the study period we identified eight patients with spontaneous spondylodiscitis. Diagnosis was based on clinical presentation, high laboratory indices of inflammation (white blood cell count (WBC), erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP)), and identification of the causative organism from blood or bone marrow cultures, confirmed by magnetic resonance imaging (MRI) findings.

Demographic, clinical, laboratory, and radiological data were collected prospectively for each case. The management of the disease and clinical, laboratory, and MRI follow-up studies of the patients were also recorded. MRI findings suggestive of spondylodiscitis included increased signal of the intervertebral disc on T2 images, vertebral body marrow edema, vertebral body and disc enhancement, epidural or paraspinal inflammation, and canal compromise. At the follow-up MRI studies performed 4—6 weeks after the initial MRI, imaging characteristics were categorized as improved, unchanged, or worsened compared to the initial study. The ethics committee of the Medical School, University of Thessaly, approved the study protocol.

Results

Patient characteristics

The epidemiological and clinical data of the patients are shown in Table 1. Seven patients had been treated with analgesics, while two had received antibiotic treatment. One patient (patient 4) developed catastrophic antiphospholipid syndrome.[5,6] Physical examination revealed neurological findings in six patients, namely decreased sensation below the spinal level of infection, decreased tendon reflexes of the lower limbs, and Lasegue's sign. None of the patients was under immunosuppression, had chronic spinal disease, history of chronic back pain, or had undergone any spinal surgical procedure in the past. Diabetes mellitus was defined as uncontrolled in all six diabetic patients as attested by the high concentrations of glycosylated hemoglobin A_1.

Table 1 Epidemiological and clinical data of patients at presentation.

Patient	Sex	Age (years)	Initial prevailing symptom	Fever (≥38 °C)	Local spine sensitivity	Duration of symptoms,[a] days	Diabetes mellitus	Underlying condition	Previous treatment
1	F	53	Back pain	No	Yes	90	Yes	Scabies	NSAIDs, antibiotics
2	M	82	Back pain	Yes	Yes	30	Yes	Squamous cell carcinoma, CHD	Antibiotics
3	M	65	Back pain	Yes	Yes	20	Yes	CHD, hypertension	NSAIDs
4	F	59	Back pain	No	Yes	14	Yes	Hypertension	NSAIDs
5	M	82	Back pain	No	No	45	No	Hypertension, COPD, benign prostatic hyperplasia	NSAIDs
6	F	63	Back pain	Yes	Yes	45	Yes	Asthma	NSAIDs
7	M	57	Back pain	Yes	Yes	40	Yes	Hypertension	NSAIDs
8	F	63	Back pain	Yes	Yes	20	No	Decompensated HCV-related cirrhosis	Paracetamol

M, male; F, female; CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; HCV, hepatitis C virus; NSAIDs, non-steroidal anti-inflammatory drugs.

[a] One or more of the following symptoms: back pain, fever, chills, rigor, sweats, dyspnea, anorexia, weight loss, arthralgias, proximal muscle weakness of the lower limbs.