Sarcoidosis mimicking metastatic disease: a case report and review of the literature

F. Waanders¹, P. van Hengel², A. Krikke³, J. Wesseling⁴, P. Nieboer*¹

Departments of ¹Internal Medicine, ²Pulmonary Diseases, ³Radiology and ⁴Pathology, Wilhelmina Hospital, Assen, the Netherlands, *corresponding author: tel.: +31 (0)592-32 51 55, fax: +31 (0)592-32 56 42, e-mail: p.nieboer@wza.nl

ABSTRACT

Osseous and in particular vertebral sarcoidosis is exceedingly rare and a difficult diagnosis to establish because it may simulate many diseases, including even metastatic malignancy. We present a patient with lesions in bones, lungs and lymph nodes, mimicking the presence of extensive metastatic disease. Our case emphasises the importance of histological evidence before the diagnosis of osseous sarcoidosis can be made with confidence.

KEYWORDS

Besnier-Boeck-Schaumann, hypercalcaemia, vertebral, sarcoidosis

INTRODUCTION

Sarcoidosis is a chronic granulomatous multisystem disease of unknown aetiology, which usually affects young adults. The diagnosis of sarcoidosis is made by a combination of clinical, radiological and histological findings. Symptoms are weight loss, fatigue, fever, night sweats, coughing and shortness of breath. On the X-ray of the chest a spectrum of abnormalities can be seen varying from lymphadenopathy to extensive parenchymal destruction.

However, histological proof with noncaseating granulomata remains the hallmark of this disease. The diagnosis is sometimes difficult to establish, because sarcoidosis may simulate many diseases, including even metastatic malignancies. We present a patient with lesions in bones, lungs and lymph nodes, mimicking the presence of extensive metastatic disease.
bone demonstrated the presence of epithelioid granulomas and giant cells (figure 5). The same was found in biopsy specimens of peripheral lung tissue. Polymerase chain reaction on mycobacteria was negative. These pathological findings were consistent with sarcoidosis and because of the hypercalcaemia, treatment followed with prednisolone 20 mg/day. After six months of treatment the patient is still asymptomatic while calcium and renal function have normalised. A second MRI of the spine showed an amelioration in signal intensity without, however, a decrease in the number and volume of the lesions.

**DISCUSSION**

Sarcoidosis is a multisystem disorder characterised by noncaseating granulomatous infiltration. The most common sites of involvement are lungs and lymph nodes, while other organs such as spleen, liver, skin, eyes, muscles, bones, central nervous system and salivary
glands are less frequently involved. With this variety of organs involved, sarcoidosis can mimic other diseases. In our case, the patient was thought to have disseminated metastatic malignancy, based on bone scintigraphy, MRI and chest plus abdominal CT suggesting bone, lung, lymph node and spleen metastasis. In 2003 Haluska et al. presented a similar patient who was presumed to have widespread metastatic melanoma; vertebral MRI lesions suggested metastatic neoplasm. However, these lesions turned out to be nonnecrotising granulomas consistent with sarcoidosis. Ludwig et al. reported a patient presenting with low back pain, who was also thought to have metastatic skeletal disease based on MRI, bone scintigraphy chest CT and FDG-PET imaging, which also turned out to be sarcoidosis. A similar case was also reported by Mangino et al.

Osseous involvement is relatively uncommon in sarcoidosis. The incidence varies from 1 to 13%. Most cases of osseous sarcoidosis occur in the long bones of the hands and feet. Vertebral involvement in sarcoidosis is exceedingly rare with less than 30 cases reported. A consistent feature of previous reports of vertebral sarcoidosis is back pain, but our case shows that extensive vertebral bone lesions can be present without symptoms, with hypercalcaemia as sole abnormality. Granulomas in sarcoidosis provide a nonrenal source of 1,25-dihydroxy-vitamin D3, which has been demonstrated in lymph nodes and in alveolar macrophages. This hyperproduction may result in enhanced intestinal calcium absorption leading to hypercalcaemia. In our case, however, the vitamin D concentration was normal, so the hypercalcaemia in our patient was most likely due to the observed bone lesions.

Bone scintigraphy has been reported rarely in vertebral sarcoidosis. Although nonspecific, it may be a sensitive indicator of the extent of osseous sarcoidosis and has potential diagnostic utility in that it can localise sites for biopsy if the clinical area is not readily accessible. In a few cases MRI findings in vertebral sarcoidosis have been reported. MRI usually demonstrates multifocal lesions within the vertebrae that are hypointense (low-signal intensity) on T1-weighted images and hyperintense (high-signal intensity) on T2-weighted images, which enhance following contrast medium administration. Multifocal vertebral body lesions have a broad differential diagnosis that typically includes metastatic disease (in particular prostate, breast and lung), lymphoma, myeloma, Paget’s disease, osteomyelitis, renal osteodystrophy and granulomatous diseases, which stresses the need for further investigation. The rarity of osseous and in particular vertebral sarcoidosis plus its nonspecific imaging manifestations often lead to a significant delay in diagnosis. Management of bone sarcoidosis remains controversial, and randomised controlled trials have not been reported. Indications for therapy are not well defined, but pain, bone destruction and hypercalcaemia usually require treatment. In our case, hypercalcaemia was the indication for therapy. Calcium can exert toxic effects on renal tubules and may lead to nephrogenic diabetes insipidus and by interstitial calcium deposition to nephrocalcinosis and chronic renal insufficiency. Corticosteroids are the therapy of choice and long-term efficacy in osseous sarcoidosis has been suggested. Moreover, prednisolone in relatively low doses (10-20 mg/day) is effective in rapidly correcting hypercalcaemia in sarcoidosis. Symptoms are usually controlled, but radiographs may not show improvement. In our case, the calcium normalised by treatment with prednisolone 20 mg/day. After 11 months a second MRI of the spine showed an amelioration in signal intensity, without, however, a decrease in the number and volume of the lesions. Rua-Figueroa et al. reported a change to normal signal on vertebral MRI long after a clinical response to treatment.
In conclusion, osseous and in particular vertebral sarcoidosis is exceedingly rare and a difficult diagnosis to establish because of the resemblance to other diseases, including even metastatic malignancy. This case emphasises the importance of histological evidence, before the diagnosis of osseous sarcoidosis can be made with confidence.

REFERENCES