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RESPIRATORY CASE REPORTS

A Case of Osseous Sarcoidosis Mimicking Metastatic Cancer

Metastatik Kanseri Taklit Eden Osseöz Sarkoidoz Olgusu

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Abstract

Sarcoidosis is a chronic granulomatous multisystem disease that often progresses with lung, lymph nodes, skin and eye involvement, while bone involvement may occur more rarely. All bones can be affected, however, although the short bones, such as fingers and toes, are the most commonly affected, while vertebral involvement is rare. Bone involvement is usually determined incidentally due to the asymptomatic course of the disease. We present here the case of a 62-year-old female osseous sarcoidosis case who was diagnosed with pulmonary sarcoidosis seven years earlier and re-evaluated in our clinic due to recently developed low back pain.

Key words: *Sarcoidosis, Bone, Malignancy, Osseous sarcoidosis.*

Öz

Kronik granülomatoz multisistem bir hastalık olan sarkoidoz sıklıkla akciğer, lenf nodları, cilt ve göz tutulumları ile seyreder. Nadir olarak kemik tutulumları da görülür. Tüm kemikler etkilenebilir ancak en sık el ve ayak parmakları gibi kısa kemikleri tutar. Vertebra tutulumu ise daha nadirdir. Asemptomatik seyirli olması nedeni ile kemik tutulumları genellikle tesadüfen tespit edilir. Yedi yıl önce pulmoner sarkoidoz tanısı alan ve yeni gelişen bel ağrısı şikayeti nedeniyle kliniğimizde tekrar değerlendirilen 62 yaşında bir osseöz sarkoidoz olgusu sunduk.

Anahtar Sözcükler: *Sarkoidoz, Kemik, Malignite, Osseöz sarkoidoz.*

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Sarcoidosis is an inflammatory disease of unknown cause that is characterized by the presence of pathologically non-caseating granulomas, and that can frequently involve multiple organs such as the lungs, lymph nodes, skin and eyes (1). In sarcoidosis, the pulmonary system is affected in 90% of cases, while bone involvement is rarer, developing in 3–13% of sarcoidosis cases (1-3). Due to the asymptomatic course of bone sarcoidosis, however, this rate is estimated to be lower than it should be (4). Symptomatic patients describe nonspecific complaints such as pain, swelling and tenderness that increase with movement in the involved bone. Bone lesions are usually detected when assessing sarcoidosis with other system involvement (5). Lytic, sclerotic or both lesions can be observed in the bone upon radiological evaluation, although these findings are not specific to sarcoidosis. A biopsy is required for definitive diagnosis in cases where the clinical and radiological findings are compatible with sarcoidosis (2,3,6). The presence of multiple bone lesions in a patient with a diagnosis of sarcoidosis should also suggest bone involvement of sarcoidosis in the differential diagnosis (7).

CASE

A 62-year-old female patient diagnosed with pulmonary sarcoidosis was admitted with a complaint of low back pain lasting three months. The patient, a housewife, had no smoking, environmental or occupational dust exposure history. A granulomatous inflammation had been detected during a mediastinal lymph node biopsy 7 years earlier, and the patient had been diagnosed with stage 2 sarcoidosis. Deflazocort 90 mg/day was initiated but was discontinued within 1 year through dose reductions in intermittent outpatient clinic follow-ups. No symptoms or radiological progression were observed in the follow-up evaluations. In the current evaluation of the patient, no pathological system finding was determined from a physical examination, while the laboratory test results revealed platelet level 420x103/microL, creatinine 1.12mg/dL, alkaline phosphatase 164 IU/L (30-120 IU/L), C-reactive protein (CRP) 7 mg/mL (N= 0-5 mg/mL) and sedimentation 44 mm/h (N= 0-20 mm/h), while calcium was 322 mg (N= 100-300 mg/24h) and ACE 64 U/L (N= 13-64 U/L) in 24-hour urine. There were no pathological findings in the eye or in the dermatological examination, and pulmonary function test results were within normal limits, although there was a slight decrease in diffusion capacity for carbon monoxide (5.03 mmol/min/kPa; 65% predicted). High-resolution computed tomography (HRCT) revealed multiple mediastinal lymphadenopathies, multiple nodules measuring 11 mm scattered across both lungs, and interstitial density increases in reticulonodular weight in the parenchyma (Figure 1). Although these findings suggested metastatic nodules, no significant progression was detected when compared to the patient's HRCT findings from 7 years earlier. She had been examined with lumbar and thoracic magnetic resonance imaging (MRI) in the center to which she had applied with low back pain. On MRI, T1 hypointense and T2 hyperintense focal lesion areas were observed in the T3, T8, T10, T11 and T12 vertebral corpus, and multiple bone lesions measuring 26x20 mm in the L4 vertebra (Figure 2). With a preliminary diagnosis of malignancy, bone scintigraphy and abdominal computed tomography (CT) examinations were carried out. The bone scintigraphy revealed increased activity in the lateral part of the right humerus neck, the lateral part of the right fifth rib, and in the T12, L1 and L3-4 vertebrae, while hypodense nodular areas were noted in the vertebral column that could not be differentiated from lytic lesions in abdominopelvic CT.

A biopsy was performed at the level of the L3 vertebra with a preliminary diagnosis of osseous sarcoidosis and malignancy. Granulomatous inflammation was reported in the histopathological evaluation, while no staining was observed in mycobacterium bacillus in the granuloma structures with Zielh-Neelsen and histiocytes with CD68. Furthermore, no significant staining was observed with CD30 performed for the differential diagnosis of infiltrative tumoral pathology and lymphoma with immune histochemical pan-cytokeratin (Pan-CK) and epithelial membrane antigen (EMA). Based on the present findings, the patient was diagnosed with osseous sarcoidosis and treatment was initiated, and she was taken to follow-up.

DISCUSSION

Osseous sarcoidosis is known to affect primarily the bones in the hands and feet, and less frequently, the skull, vertebrae and pelvis (7-9). Vertebral sarcoidosis is generally asymptomatic, while the majority of symptomatic patients describe low back pain, and some may develop neurological symptoms (10). Vertebral involvement of sarcoidosis presents on radiography and CT as lytic or sclerotic lesions, or a combination of both (11), and pulmonary involvement in the form of mediastinal lymphadenopathy and/or parenchymal abnormalities accompanies in 80–90% of osseous sarcoidosis patients (12). Our patient had been diagnosed with sarcoidosis 7 years earlier, and presented with new-onset low back pain but

no neurological deficit. HRCT revealed multiple mediastinal lymphadenopathies, multiple scattered nodules in both lungs and reticulonodular lesions in the parenchyma, and abdominopelvic CT revealed hypodense nodular areas in the vertebral column that could not be distinguished from lytic lesions.

Axial skeletal involvement in sarcoidosis has been reported only rarely, although new imaging methods such as MRI and Fluorine 18 fluorodeoxyglucose (FDG) positron emission tomography (PET-CT) may increase the identification of axial involvement (11). PET-CT is a highly sensitive test that shows bone lesions that cannot be visualized by radiography or CT, although granulomas also show increased involvement in PET-CT, leading to false positive results and making it difficult to differentiate from malignancy (12). In such cases, MRI may provide a more accurate evaluation of the bone structure (13), although neither PET-CT nor MRI alone is sufficient to differentiate malignancy (14).

MRI is diagnostically significant as it offers a good guide to the differential diagnosis of osseous sarcoidosis lesions and bone biopsy (12). Sarcoidosis lesions appear hypointense in T1 and hyperintense in T2 on MRI (7,14). These findings are not specific for sarcoidosis, and so a differential diagnosis should rule out metastatic cancers, Paget's disease, osteomyelitis, multiple myeloma and lymphoma should be made (15). Multiple lesions were detected in our patient on a thoracic and lumbar spine MRI. A biopsy was performed at the L3 vertebral level with increased uptake on MRI for the differential diagnosis. A histopathological diagnosis of granulomatous inflammation was made, and based on her clinical, radiological and histopathological findings, the patient was determined to have osseous sarcoidosis.

Studies investigating the radionuclide imaging of sarcoidosis are scarce. In a study carried out by Cinti et al. (11), numerous involvements were detected in the ribs and calvarium that regressed following steroid treatment. In the present study, bone scintigraphy revealed increased activity in the lateral part of the right humerus neck, the lateral part of the right fifth rib, and in the T12, L1 and L3-4 vertebrae.

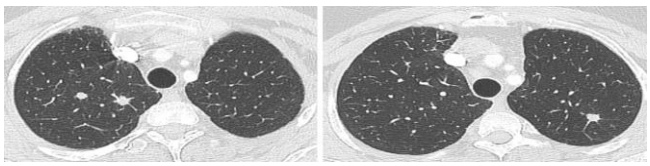

Figure 1: Bilateral scattered multiple nodular densities and interstitial density increases in reticulonodular weight in the parenchyma on HRCT imaging

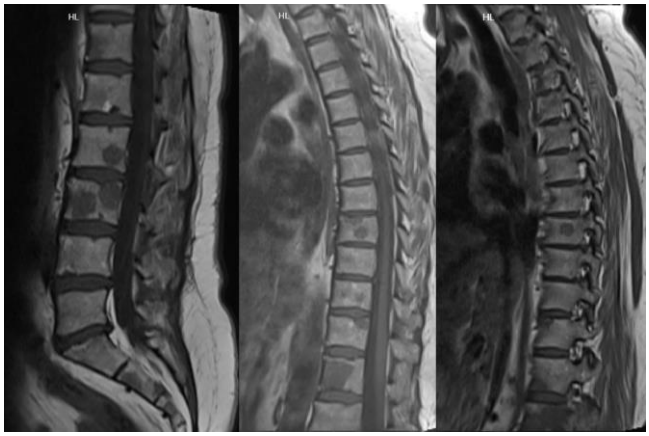

Figure 2: Low-density multiple involvement areas on T1-weighted sagittal MR imaging of the thoracolumbar spine

There is a lack of consensus on the treatment of osseous sarcoidosis. Spontaneous remission is observed in some patients, and no treatment is needed (16), while hypercalcemia, bone destruction and the presence of symptoms have been identified as indications for treatment (17). The main aim of treatment is to reduce the granuloma burden (5). Corticosteroids are used as first-line therapy, and the treatment response is generally good due to their efficiency in relieving inflammation and relieving symptoms. Bone lesions persist, however, even when symptoms are controlled in some cases. If adverse effects to corticosteroid develop or in resistant cases, methotrexate, hydroxychloroquine, adalimumab and infliximab treatments can be substituted or used in combination (18,19). Since our patient was symptomatic, we initiated corticosteroid treatment with planned dose reduction based on the adverse effects and symptoms in the controls.

In conclusion, sarcoidosis may affect many organs and systems, although bone involvement is rare, and is thought to be underdiagnosed because due to usually asymptomatic course. Bone scintigraphy, PET-CT and MRI are beneficial in diagnosis radiologically, while a final diagnosis should be based on biopsy, clinical and radiological evaluations together. Immunosuppressive agents such as corticosteroids, methotrexate and tumor necrosis factor-α blockers can be used to treat symptomatic cases.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - T.A., G.S., A.K., C.Ş.; Planning and Design - T.A., G.S., A.K., C.Ş.; Supervision - T.A., G.S., A.K., C.Ş.;

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