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Case Report

A Young Female With Low Back Pain Caused by Stage IV Lung Cancer

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Abstract

Low back pain is one of the most common symptoms, having a broad range of etiologies in differential diagnosis, such as inflammatory and degenerative disorders, malignancy and infections. Herein, we present an interesting patient who initially presented with sacroiliitis and was ultimately diagnosed with stage IV lung cancer. She was initially misdiagnosed as having axial spondyloarthritis. We aim to emphasize red flags in the differential diagnosis of sacroiliitis.

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Introduction

Back pain is one of the most common symptoms of patients seeking medical care in both primary healthcare centers and emergency settings. There is a broad range of etiologies in differential diagnosis, such as inflammatory and degenerative disorders, malignancy and infections. Presence of inflammatory back pain and subchondral bone marrow edema of sacroiliac joints (SIJs) on magnetic resonance imaging (MRI) is highly associated with a diagnosis of spondyloarthritis, and both findings reflect inflammation in rheumatology practice.[1] Besides bone marrow edema, all of the following- subchondral sclerosis, uniform joint space alterations and bone erosions, progression to ankylosis and obliteration of the SIJ are consistent with the main radiographic signs of sacroiliitis.[2]

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Case Report

A 38-year-old woman presented with inflammatory lower back pain that had been apparent for three months with marked morning stiffness. She rated it as an 8/10 on a numeric pain scale. Response to non-steroidal anti-inflammatory drugs (NSAIDs) was initially present but after time was not sufficient and the pain persisted day and night. The pain was constant but worse after long periods of rest. She had bilateral paravertebral spasm and tenderness, and her low back motions were painful on physical examination. Flexion adduction internal rotation (FADIR) and flexion abduction external rotation (FABER) tests were positive on compression of right SIJs.

After radiographs were obtained, MRI of the SIJs confirmed sacroiliitis and bone marrow edema *(Figure 1)*. Laboratory analysis revealed neutrophilic leukocytosis, moderate normocytic normochromic anemia, negative brucella agglutination tests and normal liver and kidney function tests. The following laboratory parameters were determined: ESR (erythrocyte sedimentation rate): 86 mm/hour, CRP (C-reactive protein): 81 mg/L, calcium: 11.5 mg/dL, alkaline phosphatase: 185 IU/L, LDH (lactate dehydrogenase): 609 U/L and D-dimer: 3333 ng/mL.

Initially she was treated with NSAIDs and high dose pulse steroids for axial spondyloarthritis (axSpA). But in the following two weeks her pain was progressive and became gradually unbearable. She underwent chest X-ray and computed tomography (CT) scan that showed a left lung lesion in the lower lobe *(Figure 2)*. A bronchoscopy was performed and the evaluation of pathology specimens led to the diagnosis of non-small cell lung cancer (NSCLC) *(Figure 3)*. A positron emission tomography/computerized tomography (PET/CT) scan excluded late stage disease and additional disease localization in bones and liver *(Figure 4)*.

After the administration of subcutaneous denosumab and chemotherapy, the patient's symptoms were dramatically improved without requiring any NSAIDs, which further suggested that sacroiliitis and inflammatory back pain were onset presentations of metastatic lung cancer.

Discussion

Sacroiliitis is one of the cancer-associated rheumatic syndromes. In our literature search, Humphrey et al.[3] reported the first and only patient having metastatic lung cancer with sacroiliitis. Our patient also presented with sacroiliitis as the first manifestation of metastatic lung carcinoma. Neoplastic involvement of the sacroiliac joint itself via cytology was not seen, as in the case mentioned above. The bone scan and hypercalcemia confirmed widespread metastatic bone lesions in our patient.

Today, use of SIJs MRI has important value in the assessment of axSpA patients. But there is currently an "overdiagnosis" of sacroiliitis on MRI. Although bone marrow edema has a central role in the definition of positive MRI findings, it is not specific for spondyloarthritis (SpA).[4] A substantial proportion of healthy individuals without inflammatory back pain also have

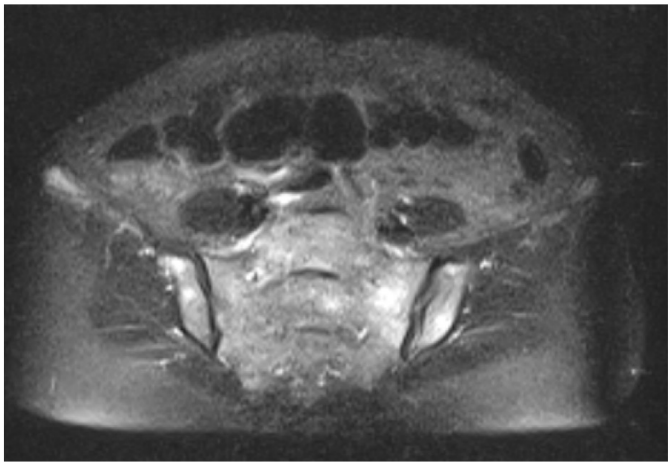

Figure 1. Sacroiliitis on T2 weighted magnetic resonance imaging of the sacroiliac joint.

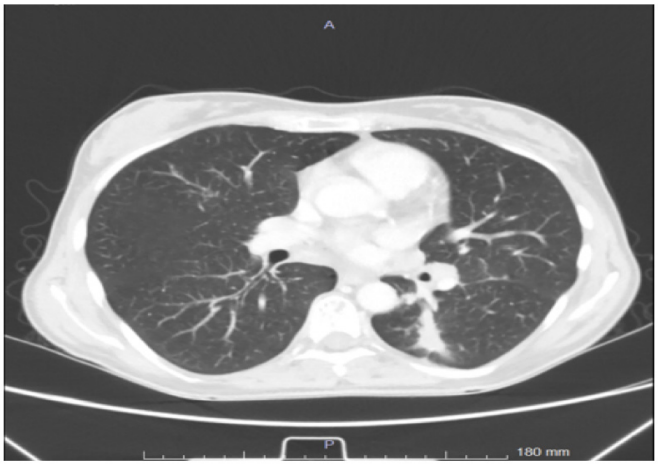

Figure 2. Torax CT: a left lung lesion in the lower lobe.

positive MRI findings for sacroiliitis as well as malignant patients.[5] Zhao et al.[6] investigated the final diagnoses and MRI findings of 34 patients with the chief complaint of back pain who were misdiagnosed as having SpA. In four patients neoplastic disease was found, and bone marrow edema in MRI was found in all of the neoplasm patients.[6] As a result, sacroiliitis of SIJs may be a presenting paraneoplastic radiographic finding in patients.

Acute onset of unilateral or bilateral sacroiliitis with elevated ESR/CRP, fever, positive bone scintigraphy, diagnostic changes in the peripheral blood count, concurrent lymphadenopathy and obvious weight loss may primarily suggest hematological and/or solid malignancies.[7] In a comprehensive review, three red flags were noted for malignancy ('history of cancer', 'unintentional weight loss', 'pain at rest') in patients with low back pain.[8] In addition, progressive pain that was unresponsive to NSAIDs in the follow-up suggested to us further investigation and imaging modalities, since one of the positive SpA features in the Assessment of Spondyloarthritis International Society (ASAS) classification criteria is a marked clinical improvement with NSAIDs.[9] Especially in the presence of alarm symptoms as mentioned above, presence of sacroiliitis alone should not be accepted as SpA.

Malignant osseous lesions or metastases in the pelvis should be included in the differential diagnosis of sacroiliitis on MRI of SIJs. Extraosseous spread to the anatomic borders of bones of SIJs and to the extracapsular area of the joint cavity generally indicate a neoplastic process rather than an inflammatory process. Aggressive-appearing multifocal lesions of bone marrow edema and other skeletal metastases are commonly seen in malignant diseases.[10] Acute destruction of intervening cartilage and/or opposing bones of the joint may also suggest an underlying malignancy when it is incompatibly present with the duration of the illness.[11]

Recently it was also noticed that patients with stage IV lung-cancer-associated hypercalcemia have a poor prognosis, and abnormal elevation of alkaline phosphatase level is accepted as one of the significant factors shortening patient survival time.[12] In addition, plasma D-dimer levels may also be useful for early diagnosis and staging of patients with NSCLC.[13] Hypercalcemia and elevated levels of ALP and D-dimer were also poor prognostic laboratory results in our patient. Denosumab is initially preferred for reducing the risk of developing skeletal-related events.

Conclusion

Our case illustrates that malignancy such as metastatic lung carcinoma should be considered in the differential diagnosis of sacroiliitis. Progressive pain unresponsive to NSAIDs and hypercalcemia require a reconsideration of diagnosis with appropriate further imaging studies, as in our case. Clinicians should keep in mind red flags in the disease course, response to treatment modalities and abnormal laboratory findings for patients presenting with sacroiliitis.

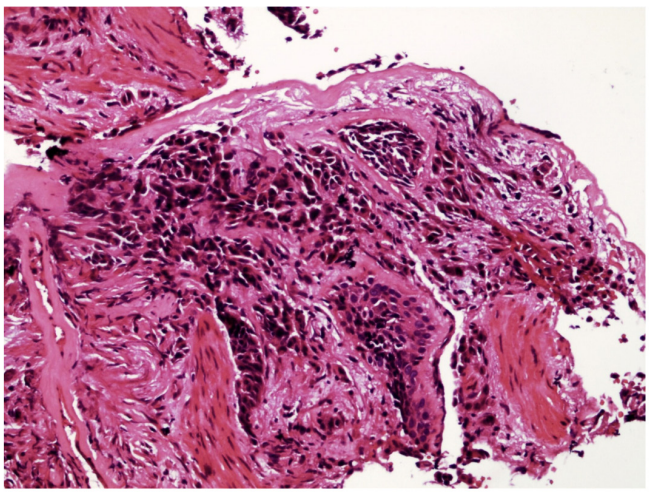

Figure 3. Non-small cell carcinoma, showing islands-style development consisting of pleomorphic cells with large cytoplasm 'NOS'.

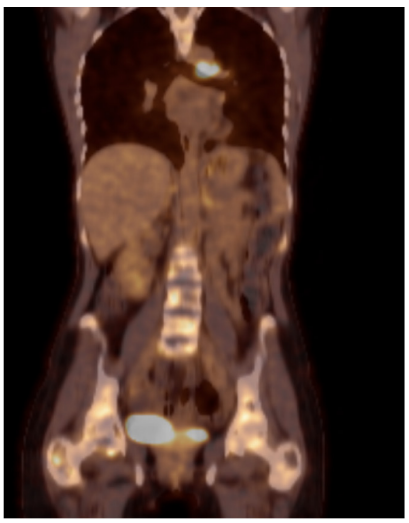

Figure 4. Widespread stage 4 disease, additional disease localization in bones and liver.

Conflict of Interests

Authors declare that there are none.

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