Uncommon presentations of SAPHO syndrome

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Abstract

Case one had the aspect of an ivory C5 vertebra. Bone metastasis was suspected but scintigraphy showed the characteristic "bullhead" appearance. Case two had an MRI simulating infectious spondylodiscitis but scintigraphy confirmed SAPHO. Case three had the aspect of vertebral metastasis but scintigraphy eliminated malignancy and confirmed SAPHO.

Key Messages:

The specificity of our cases is their different presentations. The first case and the third case simulated bone tumors. The second case had the aspect of spondylodiscitis with soft tissue involvement, which to our knowledge have not been reported previously, and with simulated infectious spondylodiscitis.

Introduction:

The acronym SAPHO (synovitis, acne, pustulosis, hyperostosis, and osteitis) includes a group of diseases with similar osteoarticular manifestations and skin conditions [1,2]. The incidence is thought to be less than 1/10 000, with the highest occurrence in children and young adults [3,4]. There are no validated diagnostic criteria and the diagnosis is based on clinical and radiological findings. When atypical sites are involved and there are no skin lesions, the diagnosis may be difficult to be differentiated from other diagnoses, especially bone tumors, and infectious disease. Herein we present different cases where the diagnosis was not easy to make.

Case History:

Case 1: A 46-year-old woman presented with eight months of cervical pain history. She had selective pain upon palpation at the cervical spine. Blood analysis was normal. Cervical Spine X-ray revealed osteosclerosis of the C5 vertebral body with the aspect of an ivory vertebra which was confirmed on the cervical scanner (Fig. 1). The spinal magnetic resonance imaging (MRI) showed an abnormal signal on C5 and C6 with a hypointense signal on T1 and T2 and a hyperintense signal on T2 Short TI Inversion Recovery (STIR) and post-contrast enhancement. Bone metastasis was suspected. A thoracoabdominal pelvic (TAP) tomography was performed searching for primitive tumors and did not found any suspect lesion, but showed sclerosis and hyperostosis of the manubrium and fusion on edges of sternocostal joints. There was not sacroiliitis. We completed by bone scintigraphy of the whole body, showing increased uptake in the sternoclavicular articulations with a characteristic "bullhead" appearance. SAPHO syndrome was diagnosed and treatment with diclofenac was initiated, with real clinical improvement. The control X-ray showed the appearance of para-vertebral ossification with the aspect of an ivory C4, C5 and C6 vertebra (Figure 1b).

Case 2: A 61-year-old woman presented with complaints of the thoracic and lumbar spine. Clinical examination showed a stiffness of the lumbar spine. The C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were elevated to 14 mg/L and 83 mm respectively. Conventional radiography showed a narrowing of the intervertebral discs D5-D6 and D6-D7. Spine MRI showed spondylodiscitis in D3-D4, D4-D5, D5-D6, D6-D7, and L1-L2 and soft tissue involvement, simulating infectious spondylodiscitis (Fig. 2). All infectious investigation was negative (chest X-Ray, cytobacteriological examination of the urine, Tuberculin Skin Test, Wright test). A biopsy was performed showing unspecific inflammation. As the patient was a consumer of unpasteurized milk and according to the MRI findings, the diagnosis of brucellar spondylodiscitis was first evocated and treatment with Rifadin and doxycyclin was decided upon. After six months of treatment, no clinical improvement has been noted. CRP and ESR remained elevated. No bone reconstruction has been noticed in the plain radiography. So a second MRI was performed and showed the stabilization of the original lesions and the appearance of a new lesion in L4-L5. A second vertebral biopsy was performed and was sterile. The diagnosis of SAPHO was then suspected and bone scintigraphy was performed showing uptake in the chondrosternal articulations and D4 to D7 vertebrae, corresponding to the diagnosis of SAPHO. The patient did not respond to four classes of NSAIDs, so the decision was to switch to Etanercept with clinical and biological improvement and unchanged lesions in MRI after 3 months.

Case 3: A 46-year-old man followed at the department of carcinology for lung adenocarcinoma. Staging for metastatic disease, a TAP tomography was performed and showed osteosclerosis of vertebral bodies of D8 to D12 and L4 with paravertebral ossifications (Fig. 3a) and bilateral osteosclerosis in the sacroiliac joints (Fig. 3b). Among the relevant history of the patient, we found mechanic low back pain lasting for 20 years. As malignancy could not be eliminated, an MRI was performed showing bilateral sacroiliitis (Fig. 3c) and abnormal signal in the D4 to D11 vertebrae. Bone scintigraphy showed increased uptake in the manubrium, D8 to D11 vertebrae, sacroiliac joints, right collarbone, and skull. The diagnosis of SAPHO was made and the patient was treated by diclofenac. Control by a TAP tomography was performed, showing ankyloses of sacro-iliac joint (figure 4).

Discussion:

SAPHO syndrome was first described by the French Society of Rheumatology in 1987 as a group of musculoskeletal manifestations that can or cannot be associated with dermatologic lesions [1]. The osteoarticular manifestations include synovitis, hyperostosis, and osteitis. The skin manifestations typically are palmoplantar pustulosis and acne. They can either precede (40-60%), occur simultaneously (30%), or after the start of the osteoarticular lesions (32-60%) [5,6]. At least 15% of adult patients may never have skin manifestations. The diagnosis of SAPHO syndrome is not difficult when the typical osteoarticular lesions are located in characteristic target sites. The diagnosis is more difficult if atypical sites are involved and there is no skin disease. In our cases, no patient had dermatologic manifestations. The osteoarticular involvement is generally insidious in onset [7], like in our third patient where the diagnosis was fortuitous. Although the sternoclavicular involvement is the most common localization, other bones in the axial or peripheral skeleton may be involved. The spine is the second most common site in the disease being involved in up to one-third of cases, most frequently in the thoracic spine, followed by the lumbar and cervical spine [8]. Spinal involvement is usually segmental, most commonly affecting a single vertebra, but occasionally affects up to four lesions [8]. All our patients had more than one vertebra affected, and our third patient even had five vertebrae affected. There is frequent involvement of the soft tissues but abscess and epiduritis are usually not seen [8]; however, our second case presented infrequent liquid paravertebral masses, which to the best of our knowledge have not been reported before. The presence of liquid masses makes the differential diagnosis with an infectious disease more difficult, especially knowing that an infectious theory involving Propionibacterium Acnes has been proposed [9]. P Acne activates innate immune response through Toll-like receptors [10]. It can persist in a latent form in bone cells and to enhance IL1ß production by skin and bone cells leading to dermatologic and osteoarticular lesions [11]. Sacroiliitis of SAPHO is observed in 13% to 52% of cases [12,13], it is more frequently unilateral and is characterized by a predominance of hyperostosis and sclerosis in the iliac side [7]. Our third patient had bilateral sacroiliitis. MRI is the most sensitive imaging technique in evaluating soft-tissue swelling, synovial reaction, and intra-articular effusion and synovial re-

action in SAPHO syndrome [14]. Bone scintigraphy can be very useful because it not only shows increased uptake in the affected sites but also reveals silent lesions [15]. The most frequent localization is the anterior chest wall, especially the characteristic appearance of bull's head, as seen in the first case. Bone biopsy does not reveal specific lesions but it helps to exclude malignant and infectious aetiologies [7]. Most patients are treated in a symptomatic way with nonsteroidal anti-inflammatory drugs (NSAIDs) and analgesics. The role of antibiotics remains unclear. Conventional disease-modifying anti-rheumatic drugs (DMARDs) have their place. In the refractory cases, anti-TNF alpha agents are used. A good response is frequently obtained like in our second case [16]. The prognosis of SAPHO syndrome is considered to be relatively good [12]. But the ignorance of the syndrome and the fear of a bone tumor or an infectious disease are a major source of antibiotics and biopsy.

In conclusion, the diagnosis of SAPHO syndrome is not difficult when typical bone lesions are associated with typical skin manifestations. The diagnosis is much more difficult if the osteoarticular sites are atypical, especially if the patients are free of skin disease. In those cases, imaging findings could facilitate differentiating SAPHO syndrome from other diseases.

Author Contributions:

Author 1: Design, literature search, manuscript preparation, manuscript review

Author 2: Design, literature search, manuscript preparation, manuscript review

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Author 5: manuscript review

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