SAPHO syndrome. A case report

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Abstract

The SAPHO syndrome includes five entities: Synovitis, Acne, Pustulosis, Hyperostotis and Osteitis. Its main characteristic is the association between multiple inflammatory osteoarticular conditions and specific cutaneous disorders. Based on the case of a 15-year-old teenager with SAPHO syndrome, we set out to have the scientific community aware of the importance of early diagnosis and appropriate treatment in this condition. Low-prevalence-conditions have always created diagnostic problems in medical practice; in the case of the SAPHO syndrome, diagnosis takes eight months, on average. Diagnosis is mainly medical. It is worth highlighting that it is a syndrome generally chronic, self-limiting and benign, with periods of exacerbation and remission. Antibiotic treatment and invasive procedures are not the ones of choice.

Key words: SAPHO; SAPHO syndrome; synovitis; hyperostosis; pustulosis; osteitis.
Level of evidence: IV

Síndrome SAPHO. Presentación de un caso clínico

Resumen

El síndrome SAPHO incluye cinco entidades: Sinovitis, Acné, Pustulosis, Hiperostosis y Osteítis. Su característica principal es la asociación de múltiples afecciones osteoarticulares inflamatorias con trastornos cutáneos específicos. A propósito del caso clínico de un adolescente de 15 años con síndrome SAPHO, nos propusimos poner en conocimiento de la comunidad científica la importancia del diagnóstico precoz y el tratamiento acertado de esta patología. Las enfermedades de baja prevalencia han originado problemas diagnósticos en la práctica clínica; en el caso del síndrome SAPHO, tiene una demora diagnóstica promedio de ocho meses. El diagnóstico es fundamentalmente clínico. Cabe destacar que es un síndrome generalmente benigno, autolimitado y crónico, con períodos de exacerbaciones y remisiones. La antibioticoterapia y los procedimientos invasivos no son de elección.

Palabras clave: SAPHO; síndrome SAPHO; sinovitis; hiperostosis; pustulosis; osteítis.
Nivel de Evidencia: IV

Conflict of interests: The authors have reported none.

Introduction

In 1987 it was suggested naming SAPHO a group of diseases characterized by disorders in the muscle-skeletal system and the skin. This syndrome includes five conditions: Synovitis, Acne, Pustulosis, Hyperostosis and Osteitis.[1] This association between osteoarticular and cutaneous lesions has been acknowledged since 1960; however, it was not known as such until the French rheumatologist A.M.Chamot coined the acronym SAPHO to describe "le syndrome acne-pustulose hyperostose- osteite" on the basis of a retrospective study carried out by the *Société Française* de *Rhumatologie*.[1] This disease is characterized by periods of exacerbation and remission, whose seriousness varies widely among patients. The main characteristic of this condition is the association it shows between multiple inflammatory osteoarticular conditions and specific cutaneous disorders. For that reason, it has always been related to spondyloarthritis. There are reports on the association between chronic recurrent multifocal osteomyelitis and the SAPHO syndrome.[2] Although the SAPHO syndrome is considered to be a rare condition, probably its prevalence has been underestimated. Anyway, nowadays it is believed that it is not higher than 1 per 10,000 people. This syndrome can be diagnosed at any age, but is more frequently seen in children and teenagers, prevailing among females.[1,3] Orthopaedics is one of the first links in the diagnostic chain since this is one of the first consultations that patients attend.

We present the case of a patient with SAPHO syndrome and a revision of clinical presentation, diagnosis and treatment so as to be able to recognize this condition early and treat it properly.

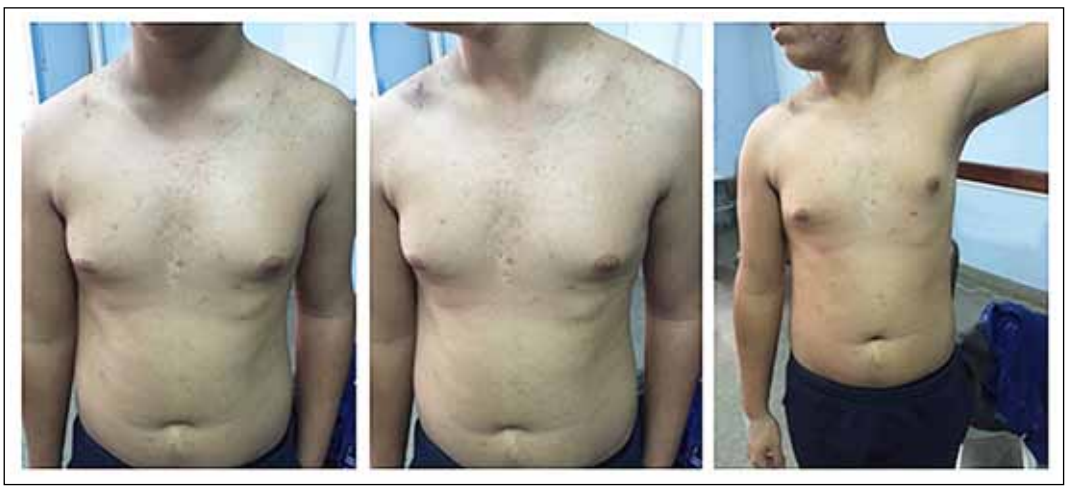
Case

He is a 15-year-old male with history of generalized acne prevailing on anterior thorax. He consults internal medicine for tumour on left clavicle, of hard consistency and distinct limits, which does not seem to involve superficial layers. He reports three-month-history of constant pain in his left sternoclavicular joint with no radiation which recedes with NSAIDs. He shows pain with nighttime component, with neither fever nor general impact, however. He denies traumatism history and does not show functional impairment (Figure 1). Right from first consultation at ER, the patient is admitted for study and diagnostic assessment. In view of a tumour-like lesion that seems to be of bone stock in a teenager, he was evaluated according to our classic algorithm—X-rays, lab of infectious profile, CT scan, scintigraphy, MRI and PET.

Analyses reveal infectious status: ESR[52] and CRP. The remaining lab-figures are whithin normal parameters: 12.8 g/dl-haemoglobin, 6.7-WBC, 296,000-platelets.

The patient is assessed with X-ray of left sternoclavicular joint, which shows an expansive bone lesion which involves the two inner thirds of his left clavicle; an osteoblastic lesion with cortex thickening and periosteal reaction of continuous type with no soft tissues-component associated (Figure 2).

So as to characterize the bone lesion further, we carry out bone-window-CT scan without contrast which shows: changes in bone morphostructural status in clavicle-two inner thirds, given by an expansive lesion with permeative pattern of bone destruction, and adjacent periosteal reaction with no soft tissues-component associated (Figure 3).



▲ **Figure 1.** Patient at the time of first consultation at the ED.

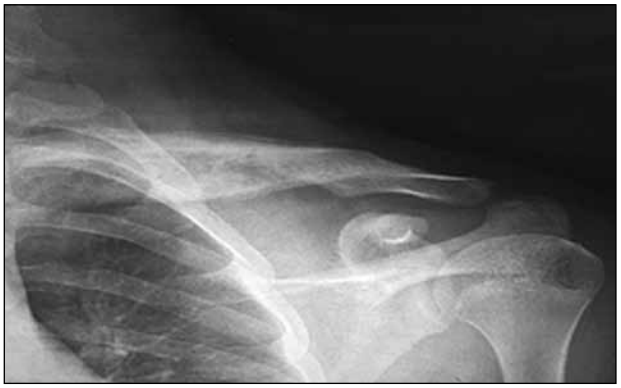


Figure 2. AP X-ray of the patient's left clavicle showing sclerosis and hyperostosis at the level of the medial segment.

The interpretation of the CT scan- imaging findings and the description of the infiltrative-bone destruction pattern, considering the latter as a hardly-distinctive lesion which spreads with no well-defined edges at the level of the bone marrow, suggest the possibility of a malignant neoplasm or another condition of aggressive behaviour. Then, we carry out MRI to assess involvement of adjacent soft tissues (Figure 4).

Afterwards we carry out technetium-99 bone scintigraphy to determine the extent of the lesions and extra-thoracic involvement (Figure 5). The study reports significant active bone suffering in the whole left clavicle, with no areas of abnormal hyper-uptake. Moreover, there is mild reinforcement at the level of the right sacroiliac joint that might convey an unspecific inflammatory process.

On the ground of these findings and our medical suspicion, we decide to carry out PET for diagnostic orientation, thinking of the possibility that the lesion may account for a chronic inflammatory process of infectious or neoplastic type.

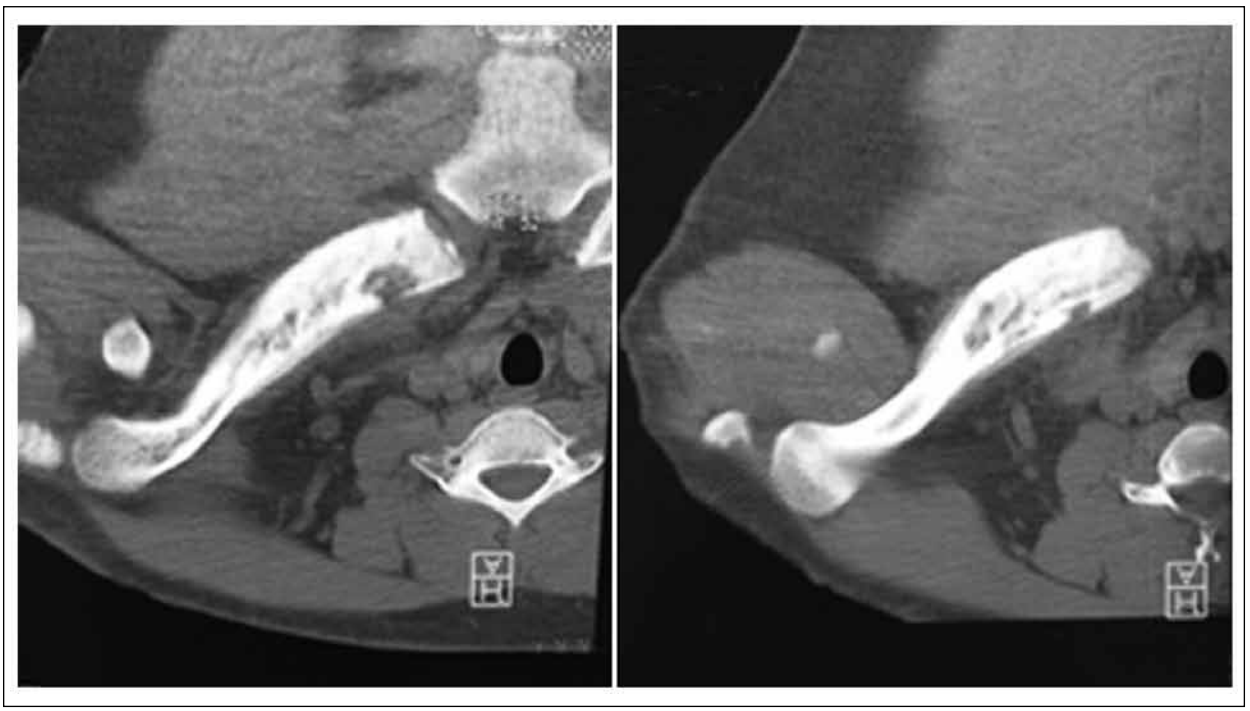


Figure 3. Axial CTscan of the sternoclavicular region. Images showing increase in bone density with hyperostosis, osteosclerosis and subchondral erosion in the two inner thirds of the clavicle.

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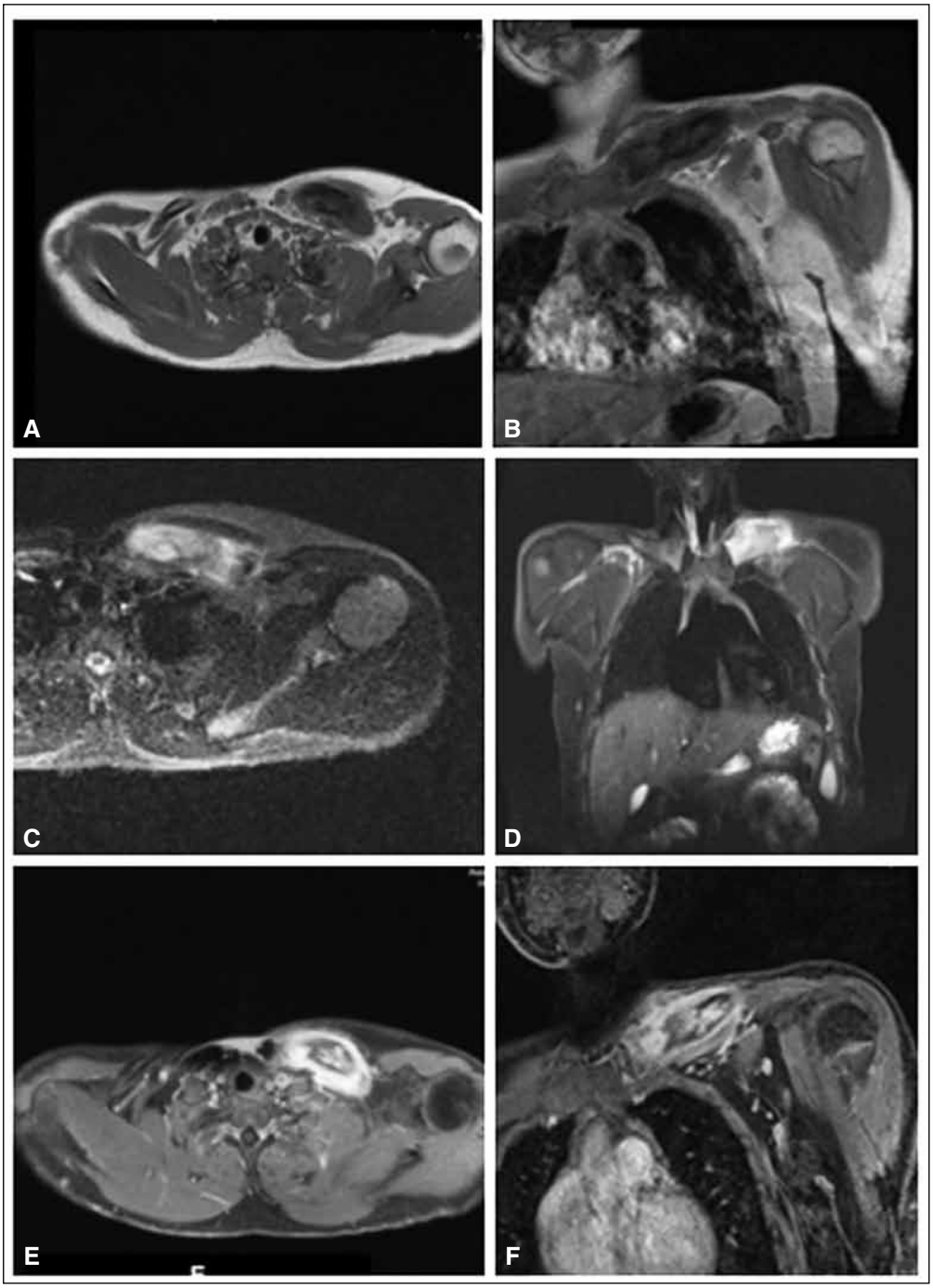
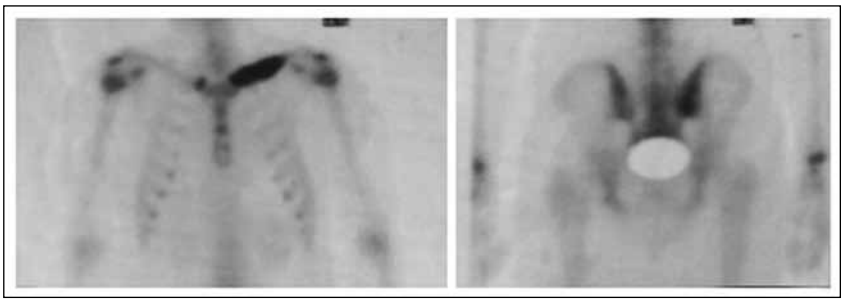


Figure 4. Axial and coronal gadolinium-enhanced T1, STIR T2 and T1 weighted fat-saturated MRI. **A and B** Bone morphological and structural changes in the two inner clavicular thirds, slightly hypointense in T1, and soft tissues component. **C and D** STIR T2 sequence. Hyperintensity in the lesion, with oedema in bone marrow. **E and F** Intense enhancement at the level of the lesion and soft tissues surrounding the lesion, after contrast administration.

The study depicts hypermetabolic bone lesions in left clavicle and right sacral wing, whose morphological and structural characteristics lead to the suggestion of other alternatives as differential diagnosis—inflammatory/infectious process (seemingly chronic osteomyelitis) as first diagnostic option, and tumour as less likely.

On the other hand, there are multiple hypermetabolic cutaneous thickened areas which affect the patient's scalp on occipital, frontal, zygomatic and maxillary regions, his trunk and his scapular girdles, and which seem to be dermal lesions of suppurative pustular aspect. These findings suggest the presence of an infectious inflammatory pro-

Figure 5. Bone scintigraphy.

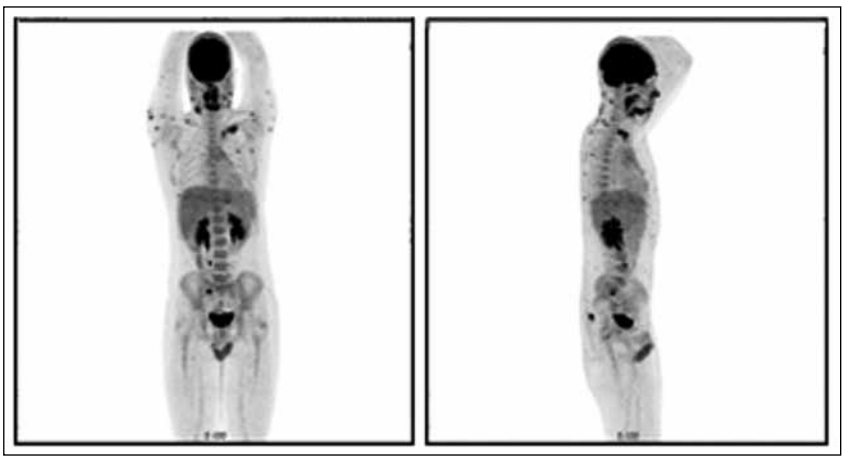


cess of cutaneous origin which is consistent with the acne that the patient suffers (Figures 6 and 7).

At a pediatric orthopaedics ground-round, it is decided to perform incisional biopsy as last diagnostic attempt to confirm the lesion's tumoral nature by histopathological analysis and bacteriologic culture.

The incisional biopsy is carried out by a 2-cm-approach on the greatest clavicle axis. We take five samples with puncture trocar, which are submitted for histopathological analysis and bacteriologic culture. The macroscopic aspect of the lesion is of hard bone, without pathologic signs. Cultures do not develop bacteriologic colonies either (Figure 8).

Figure 6. PET. Map of the entire body showing the distribution of the different areas of hypermetabolism (of note is uptake at cutaneous level).



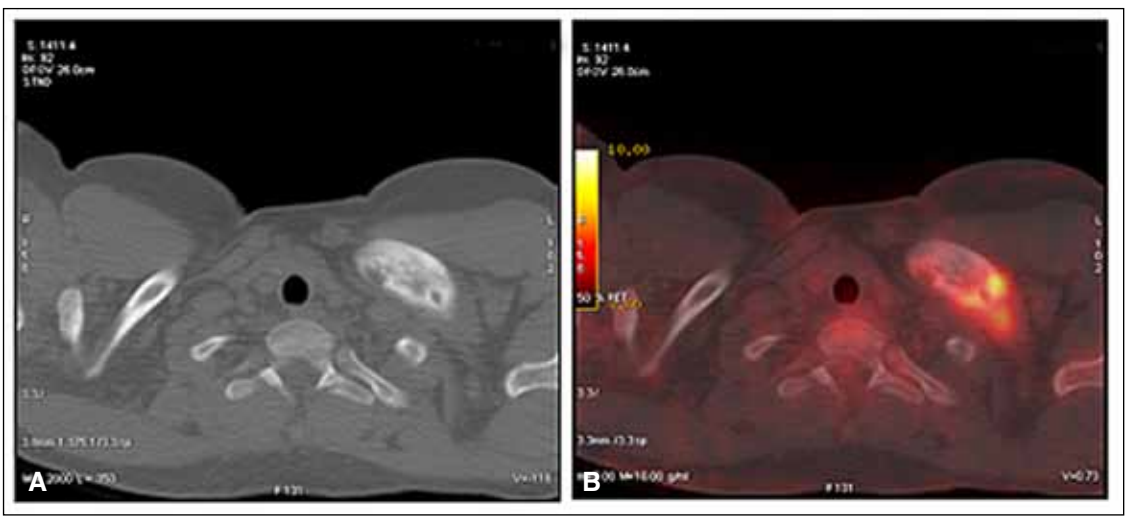


Figura 7. 18F-FDG PET. **A and B**. Remarkable remodelling of left clavicle, which shows diffuse changes in density, with a sclerotic lesion that involves cortex and bone marrow, and lytic areas within. Hypermetabolism with maximal 7.1-SUV. Minimal component of adjacent soft tissues.

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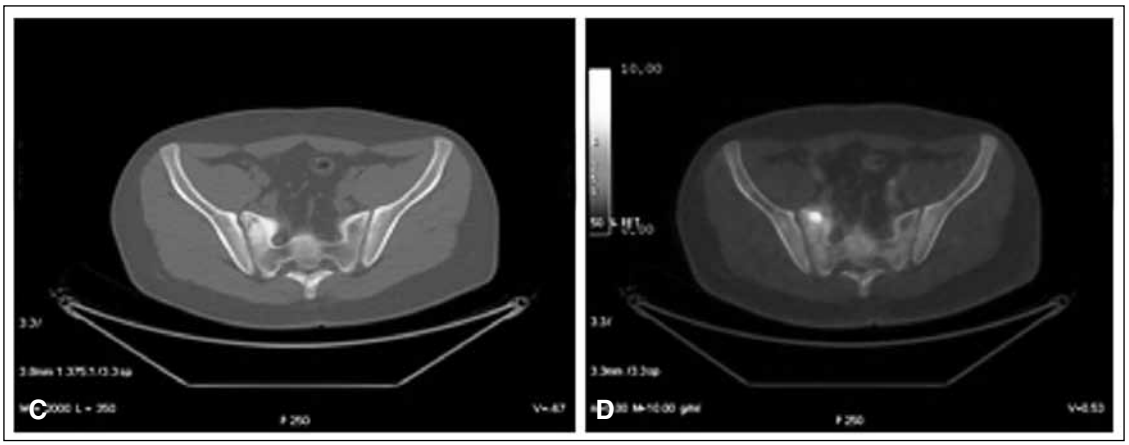

Figura 7. C and **D.** Mixed hypermetabolic bone lesion with core blastic and lytic areas at the level of the right sacral wing.

Treatment

Upon the multidisciplinary ground-round in which participants were imaging specialists, pediatric orthopaedists, nuclear medicine specialists, rheumatologists and pediatric oncologists in our institution, we conclude that the patient suffers SAPHO syndrome.

He is admitted at the National Institute of Rheumatology where he receives symptomatic treatment with NSAIDs and i.v. corticosteroids. Symptoms disappear and he is discharged from hospital with the indication of periodic medical checkups with the rheumatologist and the orthopaedist.

Nowadays, the patient enjoys a good quality of life, and he was able to retake activities of daily life with improvement on symptoms and severe acne. His treatment includes only NSAIDs when he feels pain at the level of his left sternoclavicular joint which, he affirms, is just sporadic. He needs to subject himself to half-yearly checkups by internal medicine (Figure 9).

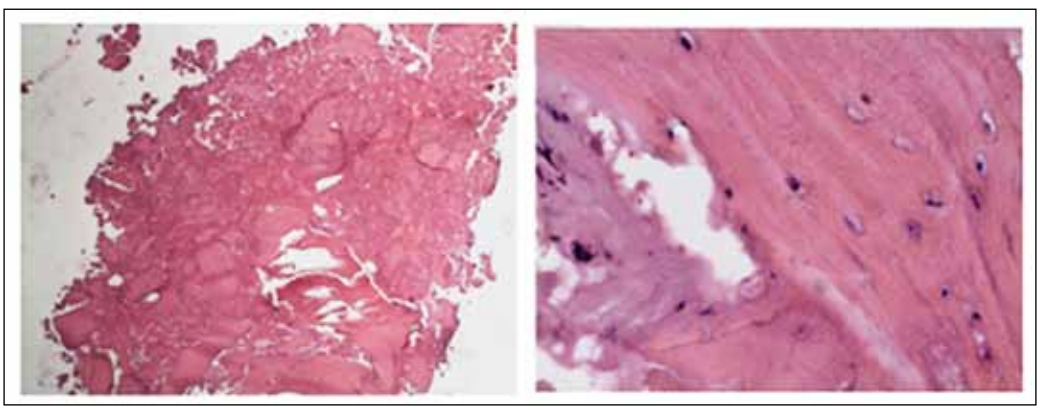

Figura 8. Sample of biopsy taken from the reactive bone, sclerosis with irregular lines of cement and evidence of bone destruction. There are neither inflammatory nor neoplastic elements.

Discussion and Conclusions

Low-prevalence-conditions have always created diagnostic problems in medical practice. The SAPHO syndrome is a clear example, because without high levels of medical suspicion, it is not possible to make diagnosis. So much so, that the average time between symptoms onset and SAPHO syndrome diagnosis is eight months. In this time span patients consult several health professionals, who carry out numerous studies and invasive procedures, leaving more sequelas than the condition itself, and causing frustration not only to the child but also to his or her entire family. In our patient, diagnostic delay was two months.

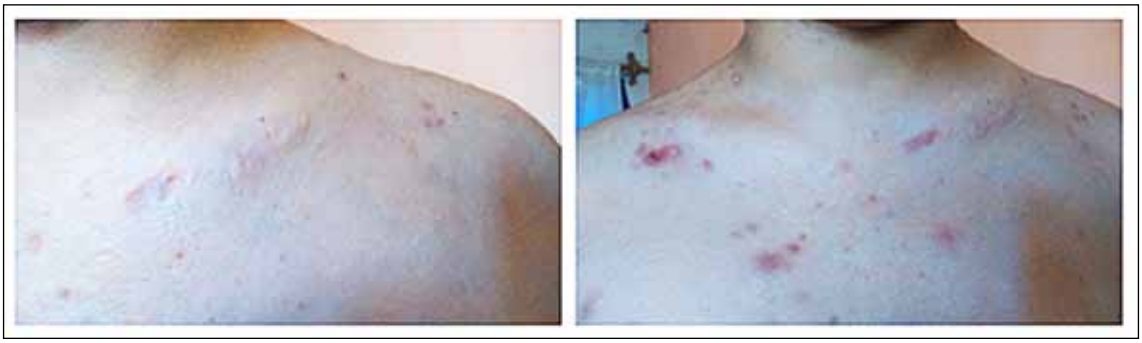

Figura 9. The patient today. There is still severe acne and swelling at the level of left sternoclavicular region.

Out of our revision it is possible to conclude that diagnosis is mainly medical. It is worth highlighting that the SAPHO syndrome is generally chronic, self-limiting and benign, with periods of exacerbation and remission. Medical onset is widely varied in both children and adults, but its main characteristic is simultaneous, consecutive or isolated osteoarticular and cutaneous involvement. In view of a patient who shows these characteristics, it is necessary to make the appropriate diagnostic decisions so as to rule out differential diagnoses that, as it has already been stated, have their own prognostic and therapeutic implications.

If in doubt, it may be necessary to carry out bone biopsy, which uncovers sterile osteitis, although some authors are adamant that when the syndrome onset has some highly specific characteristics, such as anterior thorax involvement of hyperostosis or osteitis type associated with trunk acne, bone biopsy can be avoided. There is no universally recommended treatment, since there is not any publication along those lines with I- or II-level of evidence studies. Nowadays treatment is mainly empiric and symptomatic.

Undoubtedly, the main advantage of SAPHO syndrome recognition is to give the patient appropriate treatment from the outset, avoiding protracted antibiotic treatments and unnecessary invasive manoeuvres. An early and correct diagnosis allows the patient to have symptoms relief. It is of the utmost importance to explain the condition characteristics to both the child and his or her parents so as to get better adaptation and keep a normal lease of life.

This is a condition that calls for a multidisciplinary therapeutic approach, with the participation of orthopaedists, rheumatologists, dermatologists, paediatricians and imaging specialists. Last but not least, since there is no general agreement and until we do not have sufficient scientific evidence, diagnostic and therapeutic decisions should be made by the GP, who should act according to his or her personal experience, the revised literature that backs them and, especially, high levels of medical suspicion. It is worth highlighting that, more often than not, the first doctor that patients with SAPHO syndrome consult is the pediatric orthopaedist, or they are the first doctor patients are referred to; therefore, it is essential for us orthopaedists to be acquainted with this condition, its pathophysiology, diagnosis, prognosis and treatment.

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