

Shoulder Osteonecrosis After Pregnancy

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Clinical Case

A 38-year-old woman without any history of interest was sent to the rehabilitation outpatient clinic due to left shoulder pain lasting 6 months and that started 2 months after the delivery of her second child. The patient reported that pain increased when elevating her left arm and sleeping on her left shoulder.

The patient stated that after her first pregnancy, 2 years prior, she also presented a limitation in the mobility of her left shoulder that improved after infiltration and range of motion exercise, recovering full movement after 2 months.

Examination showed deltoid, trapezium, and rhomboid atrophy. The articular balance of the left shoulder upon active movement was: flexion, 100°; abduction, 90°; anterior movement, reaching the posterior neck; posterior movement, reaching the hips; and general muscle strength, 3/5.

Blood count, chemistry, and immunologic studies were all normal, including antistreptolysins, ESR, PCR, RF, thyroidal hormones, antinuclear antibodies, and antiphospholipid antibodies.

On x-ray (anteroposterior and axial projections), done at 4 months since onset there was evident deformity and sclerosis of the left humeral head (Figure 1).

At 6 months since onset she underwent an MRI (sagittal and coronal planes with SE T1, coronal T2 with fat suppression, and axial T2), in which a border irregularity of the humeral head and the glenoid cavity can be seen, as well as subchondral cysts and a general reduction in the joint cartilage height (Figure 2).

A radionuclide scan with technetium-99, done after 9 months showed, on early vascular phase, a discreet reinforcement of uptake on the left shoulder and a late bone phase with a marked deposit upon uptake in a diffuse manner on the left humeral head, although with a focal deposit that was markedly increased medially (Figure 3) and that on the electromyography did not show any lesion of the accessory spinal or circumflex nerves.

Figure 1. Simple anteroposterior left shoulder x-ray.

Diagnosis and Evolution

Osteonecrosis of the left humeral head after pregnancy. The patient underwent 2.5 months of physiotherapy that consisted of electrotherapy and range of movement exercise, with a favorable outcome, disappearance of pain

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Figure 3. Gammagraphy.

and an improvement in joint and muscle balance as well as a recovery in her independence and activities of daily living.

Discussion

Osteonecrosis is defined as the death in situ of a bone segment.^{1,2} The humeral head is the second most frequent localization of non-traumatic osteonecrosis, after the femoral head.²

The disease can be primary or secondary and originated by a large variety of causes: corticosteroids, alcoholism, sickle cell anemia, trauma, etc.¹⁻⁴

Conditions associated with osteonecrosis impair blood circulation. The relatively high frequency of coagulation abnormalities in patients with osteonecrosis could be a risk factor in the development of osteonecrosis, due to the predisposition of these patients to thromboembolic phenomena.⁵ Hypofibrinolysis and thrombophilia, often increased in women with hyperestrogenemia, seem to be the cause of osteonecrosis during pregnancy⁶; however, it is difficult to demonstrate a causal relationship between pregnancy and osteonecrosis because the association is rare.⁷

Osteonecrosis is classified in several stages according to the degree of affection, as described by Cruess⁸: stage 1 is pre-radiographic, in 2 there can be sclerosis of the upper central portion of the humeral head, in 3 there is subchondral fracture and collapse of the humeral head defines stage 4 while the presence of degenerative changes in the glenoid is common in stage 5.

Diagnosis is clinical and radiological, and treatment depends on chronicity and severity of symptoms, as well as the degree of clinical and radiological progression.^{2,4} Early detection is paramount because prognosis depends on the stage and localization of the lesion.³ Stages 3 to 5 and those with radiological progression are associated with a poor outcome.⁹

Conservative treatment can be employed for stages 1 and 2¹⁰: patient education (on the known risk factors)² and physical therapy, including range of motion and electrotherapy, work therapy, analgesics, and modifications in activity. Exercises to preserve shoulder motion are recommended and activities that imply elevating the arm above the head should be restricted.¹¹ Steroid infiltration in a glenohumeral joint can alleviate the pain and delay surgery, but must be employed carefully due to the risk of infection, especially in immunodeficient patients.² Persistent symptoms suggest failure of conservative treatment and the need for surgery.¹⁰

Surgical treatment includes arthroscopic debridement and cephalic decompression for early stages and arthroplasty for advanced cases.^{12,13}

Early identification of osteonecrosis facilitates precocious intervention as well as the outcome of treatment, making the latter less invasive.¹⁴

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