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CASE REPORT

Osteoblastoma of the proximal ulna, an unusual cause of ulnar wrist pain. A case report

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During the diagnostic investigation of a patient with ulnar wrist pain, a hot spot in the proximal ulna was revealed on the technetium scintigram, which was found on radiographs to correspond to an osteolytic lesion in the proximal ulna. The lesion was resected and the histological diagnosis was an osteoblastoma. The wrist symptoms disappeared after resection of the lesion in the proximal ulna.

Key words : osteoblastoma ; proximal ulna ; wrist pain.

INTRODUCTION

Ulnar wrist pain is a common complaint. Evaluation is not always straightforward and a diagnosis may sometimes prove to be difficult. The majority of diagnoses involving ulnar wrist pain can be made through detailed history, thorough clinical examination and radiographs. However, it may occur that the cause of ulnar wrist pain is something quite unexpected. We present the case of a 21-year-old woman with an osteoblastoma of the proximal ulna shaft, whose only complaint was a long history of ulnar wrist pain.

CASE REPORT

A 21-year-old female student presented with a ten-year history of chronic ulnar wrist pain. She had no recollection of trauma, although she was an avid volleyball player. Initially the pain was mild and present only at night, and was relieved with paracetamol or ibuprofen. Six months prior to consulting our department, the pain increased, was also present during the day, and could no longer be relieved with any type of analgesics. Clinical examination of the wrist, elbow and neck was unremarkable. Plain radiographs and arthro-CT of the wrist were normal. A bone scintigraphy showed no increased radioisotope uptake at the wrist, but did show an intense tracer uptake in the proximal ulna (fig 1). Plain radiographs of the elbow (fig 2) showed an expansile osteolytic lesion in the proximal ulnar shaft, measuring 2 $\times$ 3 cm. CT-scan (fig 3a and 3b) confirmed the presence of an expansile lesion. The cortex showed attenuation but was sharply demarcated. Although marked endosteal scalloping was present, no cortical breakthrough was noted. Some mineralisation could be seen within the lesion. Based on clinical and radiological findings, the lesion was considered benign ; monostotic fibrous dysplasia and osteoblastoma were considered as possible diagnoses.

An excisional biopsy was performed through a posterior approach. The resulting gap was filled

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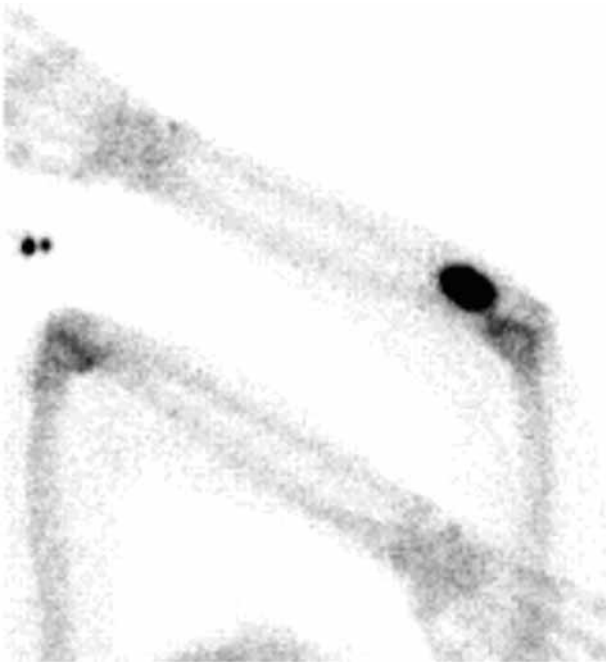

Fig. 1. — Bone scintigraphy showing intense isotope uptake in the proximal ulna.

with cancellous bone grafts. During the same anaesthesia, arthroscopy of the wrist joint was performed. No abnormalities were discovered.

Histologic evaluation revealed an irregularly formed osteoid matrix. Within this osteoid matrix, there were groups of pleomorphic spindle cells within a rich vascular stroma. Only a few fragments of the specimen showed more fibrous zones. These histological features were compatible with osteoblastoma rather than fibrous dysplasia.

Four months post-operatively the patient had recovered full function of her elbow and wrist and was completely pain free.

DISCUSSION

Benign osteoblastoma is a rare benign bone-forming tumour. It accounts for approximately 1% of all primary bone tumours and 3% of all benign bone lesions *(3, 4)*. Long bones can be affected, but the lesion has a predilection for the axial skeleton, which account for 40% of the reported cases *(1, 4)*. Long bones of the upper extremity are an extremely rare location for an osteoblastoma.

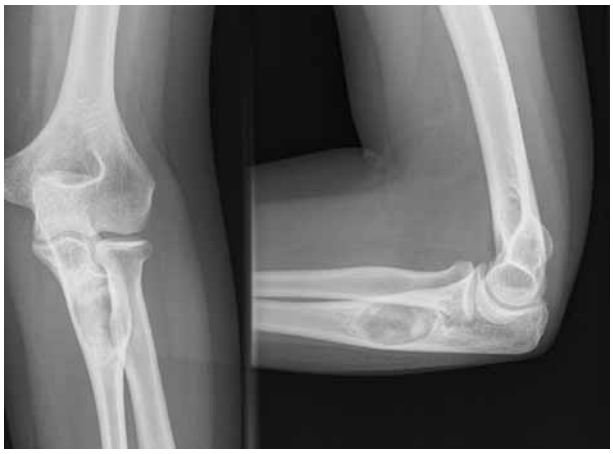

Fig. 2. — Plain radiographs showing an expansile osteolytic lesion in the proximal ulna.

Osteoblastoma commonly presents with a long history of dull, aching pain, often at rest. Occasionally the tumour is painless. It resembles closely an osteoid osteoma, but differs in its clinical and radiological presentation. Benign osteoblastoma must also be distinguished from other benign lesions such as fibrous dysplasia, non-ossifying fibroma (NOF), aneurysmal bone cyst (ABC), giant-cell tumour (GCT), and also aggressive osteoblastoma. When considering the clinical findings, radiological features and histological characteristics, the diagnosis of an osteoblastoma can be readily made.

The microscopic findings in our case are characteristic for a benign osteoblastoma. It consists of osteoid and immature bone trabeculae produced by osteoblasts, and embedded in a highly vascular stroma *(4)*. The vascular stroma is characterised by pleomorphic spindle cells *(2)*. These histological features are similar to those of an osteoid osteoma. The two tumours are closely related entities of osteoblastic origin *(7)*, and based only on these microscopical features, they cannot be differentiated from one another. They do, however, differ in their clinical presentation and radiological features.

Contrary to an osteoid osteoma, which is known for its nocturnal pain that can be controlled with aspirin, an osteoblastoma is either asymptomatic or presents with dull, localised pain *(4)*. An ABC and

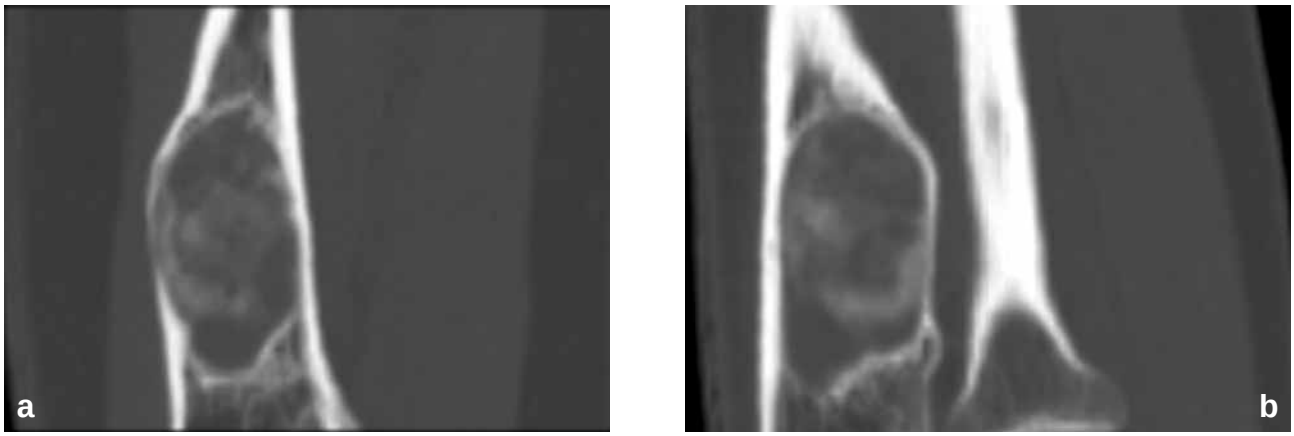

Fig. 3. — CT-scan with sagittal (3a) and longitudinal (3b) reconstruction images. The lesion is sharply demarcated with some attenuation of the cortex. Some mineralisation within the lesion can be seen.

a GCT are also typically painful. On the other hand, a NOF and fibrous dysplasia are painful only in the presence of a pathological fracture *(8)*.

On plain radiographs, osteoid osteoma is characterised by a well demarcated lytic lesion, the nidus, surrounded by a zone of reactive slerosis *(1, 3, 4)*. The nidus is usually smaller than 1 centimeter and not larger than 2 centimeters. An osteoblastoma is a much larger osteolytic lesion, but with a much less extensive zone of reactive sclerosis *(3, 4)*. The lack of sclerosis may be partially explained by the predilection of osteoblastomas for cancellous bone *(1, 3)*. Another common radiologic feature in osteoblastomas is the cortical thinning and expansion without cortical breakthrough. This can be best illustrated with computerised tomography (CT). Though typical for an osteoblastoma, cortical attenuation may also be seen in other benign lesions such as fibrous dysplasia, aneurysmal bone cyst and giant cell tumours. Giant cell tumours, considered as aggressive lytic lesions, have more aggressive radiological features such as poorly defined borders, cortical breakthrough and soft tissue expansion *(8)*. Aneurysmal bone cysts can also be readily differentiated by their multilobular "soap-bubble" appearance and their typical fluid levels *(5, 6)*. The osteoblastic nature of the lesion can be seen on radiographs by the presence of patchy or cloudy radio-opacities within the osteolytic zone *(3)*. This must be differentiated from the typical ground glass or hazy appearance of monostotic fibrous dysplasia or other fibrous lesions such as a non-ossifying fibroma. The latter can be differentiated in that it is typically eccentric and confined to the cortex *(4)*. Differentiating between osteoblastoma and monostotic fibrous dysplasia based on radiographical features can be difficult, as in our case.

Intense radioisotope uptake on bone scintigraphy is a distinguishing feature not only for an osteoblastoma, but also for an osteoid osteoma, and to a lesser extent for fibrous dysplasia and ABC *(3, 4)*. In the case presented, bone scintigraphy helped in locating the lesion : the patient had no symptoms at the location of the lesion, the proximal ulna, but only complained of ulnar wrist pain. The symptoms of our patient however seem to have been related to the lesion at the proximal ulna, since removal of the lesion completely relieved her symptoms.

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