OSTEOID OSTEOMA OF THE CARPUS
CASE REPORTS AND A REVIEW OF THE LITERATURE

M. LISANTI, M. ROSATI, G. SPAGNOLLI, G. LUPPICHINI

Osteoid osteoma mainly affects long bones, and is rarely observed at the hand. The authors report three cases of osteoid osteoma in the carpus (one case in the scaphoid, one in the triquetral, one in the capitate), treated by removal of the entire nidus. No bone grafting or intercarpal arthrodesis was necessary. There were no recurrences.

Keywords : osteoid osteoma ; osseous tumor ; carpus ; hand.
Mots-clés : ostéome ostéoïde ; tumeur osseuse ; carpe ; main.

INTRODUCTION

Osteoid osteoma is a benign primary bone tumor characterized by a central nidus consisting of highly vascularized osteoid trabeculae surrounded by an area of sclerotic osseous tissue.

Osteoid osteoma occurs in young adults and usually affects long bones. Until now 82 cases in the carpal bones have been reported (table I). The purpose of this paper is to report three other cases of carpal osteoid osteoma and to discuss the clinical and radiographic appearances in this location.

CASE REPORTS

Case 1 : G. L., a 57-year-old man, presented with a 7-months history of intermittent and mainly nocturnal pain in his right wrist. There was no history of trauma, and blood test results were normal. Radiographs showed an osteolytic area in the tuberosity of the scaphoid (fig. 1a). CT-scan revealed a radiolucent area surrounded by sclerotic bone (fig 1b). Bone scan did not show increased uptake. The lesion was treated by windowing with curettage of the tumor nidus. This resulted in full relief of pain. Histological evaluation confirmed the preoperative diagnosis of osteoid osteoma. The patient had no evidence of recurrence at 4-year follow-up evaluation.

Case 2 : S.M., a 22-year-old man, had a 1-year history of pain on the volar and ulnar aspects of his right wrist. Radiographs showed a typical target-like pattern in the triquetral bone (fig. 2), and bone scan showed increased uptake at the same location. Pain was not relieved by salicylates. At surgery malacia of the triquetral bone was observed. Histological findings led to the diagnosis of osteoid osteoma. At 5-year follow-up evaluation no recurrence was observed.

Case 3 : R.B., a 23-year-old woman, had a 7-months history of mainly nocturnal pain in her left wrist. Radiographs showed an area of increased bone density at the capitate (fig. 3a), confirmed by CT-scan (fig. 3b). Salicylate treatment was not possible owing to hypersensitivity of the patient. The diagnosis was confirmed by histological evaluation. No recurrence was noted at 18-month follow-up evaluation.

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a

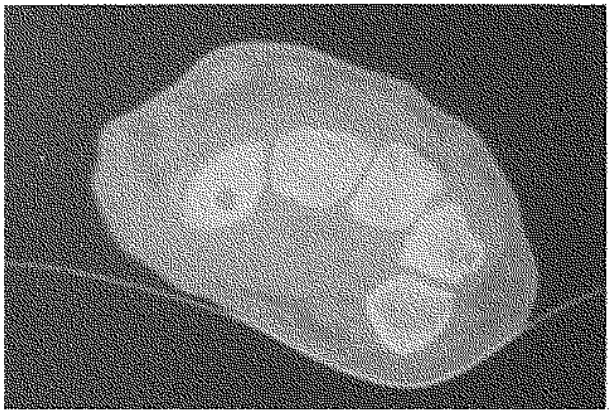

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Fig. 1. — a) G.L., a 57-year-old man. Osteoid osteoma in the right carpal scaphoid. The typical target picture is evident in the tuberosity. b) CT view.

Fig. 2. — S.M., a 22-year-old man. Typical radiographic picture of osteoid osteoma in the right triquetral bone.

DISCUSSION

Osteoid osteoma in the carpus is a rare pathology which often shows a nonspecific clinical and radiographic picture. This neoplasm is rarely observed in the hand (its incidence ranges from 2.8% reported by Besser (5) to 10.23% reported by Jackson (13)), and the carpus was affected in only half of the cases ; 82 cases, usually located in the scaphoid and the capitate, have been recorded in the literature (table I) (1, 2, 3, 44, 6, 7, 9, 10, 11, 12, 14, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27).

Dull and diffuse pain at the wrist (2) is the presenting symptom in 90% of the cases of osteoid osteoma in the carpus ; some cases of painless

a

b

Fig. 3. — a) R.B., a 23-year-old woman. An intensely sclerotic area is identified in the left hand capitate. b) Computed tomography scan.

osteoid osteoma (10, 16) have been described too, but they are rare. When pain is present it is worse at night, and it is diffuse so that it is difficult to localize it. Pain may be either dull and persistent, particularly in the deep cancellous bone, or intermittent and caused by both the irritation of the synovium and joint effusion in juxta-articular localizations. Some lesions in the capitate may cause compression of the median nerve resulting in a carpal tunnel syndrome (12, 26).

Relief of pain after administering salicylates (26) is sometimes observed ; this is considered pathognomonic by some authors and poorly reliable by others (4) ; in the current series, only one patient out of three was responsive to salicylate treatment. A slight swelling of the involved region (22) can also be observed, especially if the tumor is localized to the dorsal side of the carpal bones. Usually no alterations of the skin are visible, although there may be local swelling. On the contrary, there is usually no clinical evidence of local swelling when lesions are localized to the palmar side, since they are deeper ; nonspecific chronic synovitis can also be noted (18) in the case of cortical or subcortical locations. Limitation of wrist motion (3, 22) is sometimes associated with the typical symptomatology of osteoid osteoma.

The preoperative radiographic diagnosis of osteoid osteoma in the small carpal bones is often difficult because the reactive sclerotic bone conceals the underlying radiolucent nidus (8, 23) ; in fact in the carpal bones, osteoid osteoma usually appears as an extensive area of sclerosis rather than the typical central nidus surrounded by a sclerotic rim of bone (20) ; with respect to the other sites, radiographic evaluation leads to diagnosis in 76% of the cases (4).

When carpal bones are involved, CT-scan (16) may be a useful aid for the diagnosis showing the typical central nidus surrounded by a sclerotic rim of bone, but CT-scan is especially useful if associated with angiography showing local hypervascularization which persists late into the venous phase (18) or with scintigraphy giving evidence of increased local uptake (2).

In two of our patients preoperative CT-scan was helpful in the diagnosis, and this would support some authors' belief in its preoperative necessity.

Table I. — Case studies of osteoid osteoma in the carpus in the world literature until 1995

Authors	Trapezium	Trapezoid	Capitate	Hamate	Scaphoid	Lunate	Triquetru m	Pisiform
Ghiam 1978*	1	2	7	8	11	3	1	
Tubiana 1978						1	1	
Jensen 1979			1					
Alcalay 1982			1		1			
Symeonides 1983			2					
Riester 1984			1					
Caserta 1984				1			1	
Doyle 1985					1			
Kernohan 1985								1
Nunez 1986					1			
Shaw 1987					1			
Ambrosia 1987				2	1		1	
Allieu 1988			3		3	4	2	
Vaccari 1988						1		
Savornin 1991						1		
Chamberlain 1992					1			
Zara 1993					1			
Glickmann 1993					1			
Bednar 1993			2		4			
Priano 1993	1		1	1	4	1		
Total	2	2	18	12	30	11	6	1

* Ghiam and Bora considered the case studies from 1935 to 1978 in the world literature.

The differential diagnosis includes cysts, osteomyelitis, Ewing's sarcoma, calcification of soft tissues, enchondroma, eosinophilic granuloma, pigmented villonodular synovitis, osteoblastoma, and foreign body reaction (4). A definitive diagnosis can be made only on the basis of histological findings.

The treatment of osteoid osteoma consists of windowing with curettage and total excision of the tumor ; an autologous bone graft may be necessary if there is abundant loss of bony substance. If the joint is involved, carpometacarpal or intercarpal arthrodeses may be necessary as well. Recurrences are described in 15% of the cases (2, 10), but they are not likely provided removal of the nidus is complete. Total excision of the entire tumor nidus is permanently curative.

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SAMENVATTING

M. LISANTI, M. ROSATI, G. SPAGNOLLI, G. LUPPICHINI. Osteoïd osteoma van de carpus. Gevallenbeschrijving en overzicht van de literatuur.

Osteoïd osteoma wordt meestal op de lange pijpbeenderen aangetroffen en is zelden in de hand gelokaliseerd. De auteurs beschrijven 3 gevallen van osteoïd osteoma van de carpus (1 in het os naviculare carpi, 1 in het triquetrum en 1 in het capitatum), behandelend door excisie in toto van de tumor. Er waren geen botenten of intracarpale arthrodese nodig. Er werd geen recidief gezien.

RÉSUMÉ

M. LISANTI, M. ROSATI, G. SPAGNOLLI, G. LUPPICHINI. Ostéome ostéoïde du carpe. Présentation de cas et revue de la litérature.

L'ostéome ostéoïde affecte généralement les os longs. Il affecte rarement la main. Les auteurs signalent 3 cas d'ostéome ostéoïde au carpe (un cas au scaphoïde, un cas au pyramidal, un cas au grand os) traités par l'excision de la totalité du nidus, il n'a pas été nécessaire de pratiquer de greffe osseuse ou d'arthrodèse intercarpienne. Il n'y a pas eu de récidive.