FAST-GROWING PSEUDOMALIGNANT MYOSITIS OSSIFICANS OF THE HAND : FURTHER EXPERIENCE AND REVIEW OF THE LITERATURE

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Two new cases of pseudomalignant myositis ossificans of the hand are reported. This lesion may be mistaken for a malignancy. The benign diagnosis is confirmed by the histologically characteristic zone phenomenon. Local excision cured both patients, without evidence of recurrence at 18 and 24 months postoperatively.

Keywords : hand ; tumor ; myositis ossificans.
Mots-clés : main ; tumeur ; myosite ossifiante.

INTRODUCTION

Pseudomalignant myositis ossificans of the hand is a rare, benign lesion, which may be easily mistaken for a malignant tumor. We reported a case in 1984 (6). Since then we have encountered 2 more cases.

CASE REPORTS

Case 1

A 42-year-old man presented with a 6-month history of a painful increasing mass, localized at the midphalanx of the right midfinger. Physical examination revealed a swelling limited to the midphalanx of the right midfinger. No neurovascular deficit was present, and the patient had full range of motion of all the joints. No lymph nodes could be palpated in the axilla. A roentgenogram showed a periosteal reaction of the midphalanx and some calcified opacities in the soft tissues dorsally (fig. 1).

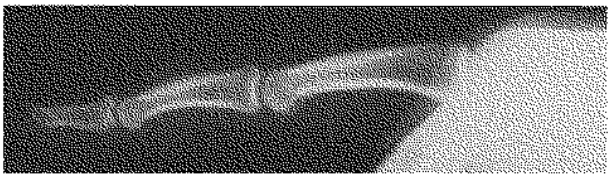

Fig. 1. — *Case 1* : lateral xray of the middle finger.

Total excision of the tumor was performed through a dorsal incision. The mass could easily be separated from the bone and was not adherent to the extensor apparatus.

Histological examination showed a benign reactive fibrous proliferation with new bone formation in the periosteum with "zone phenomenon", and areas of chondroid metaplasia. At 18 months follow-up no recurrence was noted.

Case 2

A 27-year-old man presented with a similar history of a painful swelling, increasing in volume for 6 weeks. The tumor was localized at the head of the second metacarpal of the left hand. There was no history of trauma or infection. Radiological examination revealed swelling of the soft tissues dorsally, surrounding an osteolytic lesion, without periosteal reaction (fig. 2).

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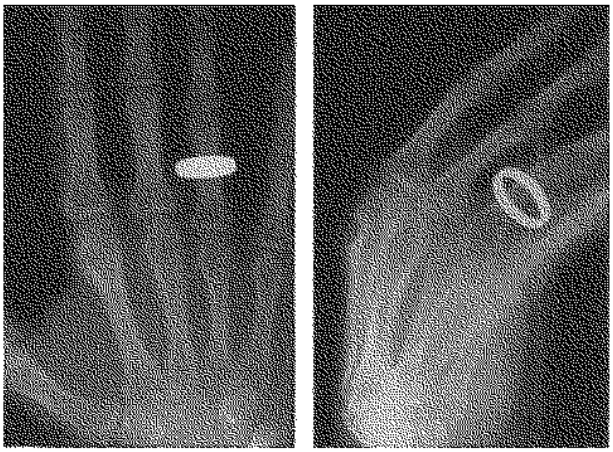

Fig. 2. — *Case 2* : oblique x ray of the metacarpal head.

Fig. 4. — *Case 2* : histology demonstrating the 3 zones of Ackerman (see text).

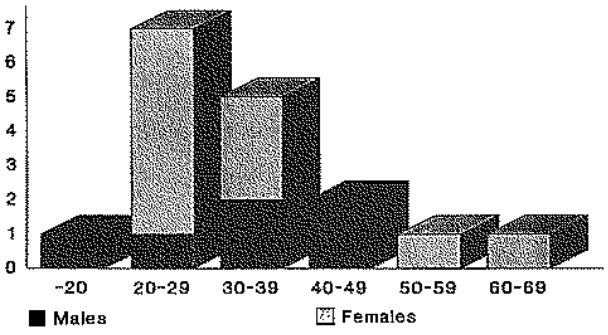

Fig. 6. — Age and sex distribution of reported and present cases.

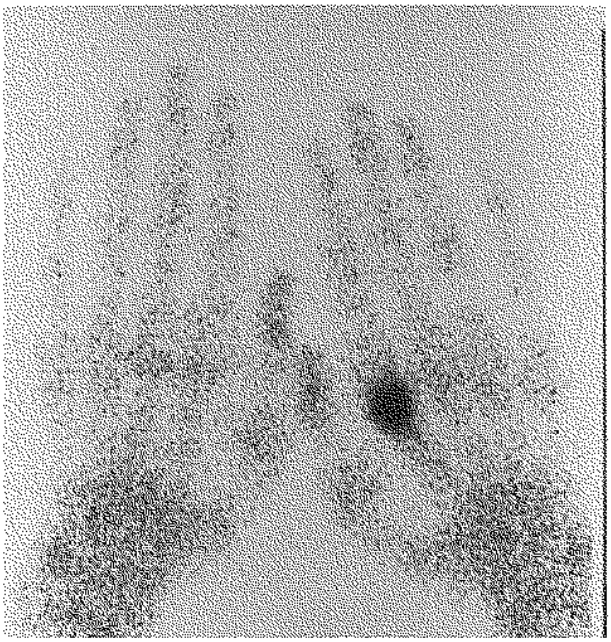

Fig. 3. — *Case 2* : increased uptake in the metacarpal head on scintigraphy.

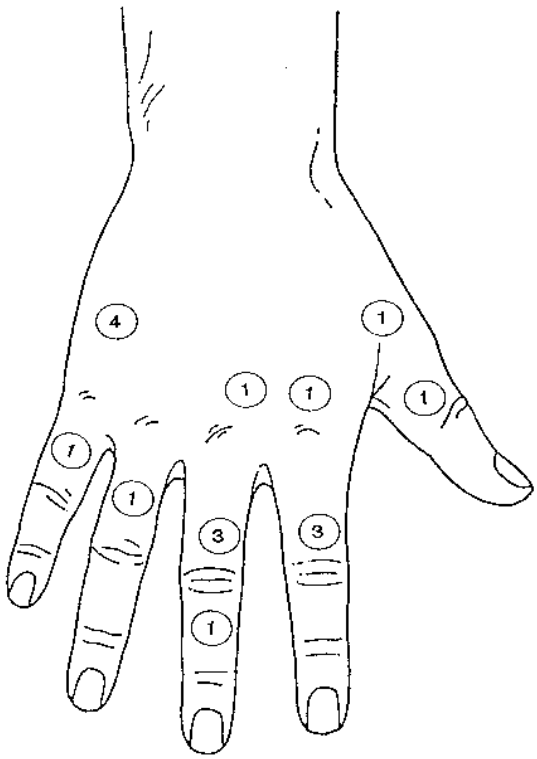

Fig. 5. — Localization of reported and present cases.

Table I

Author	(ref.)	Year	Sex	Age	Localization	Treatment
Mallory	(16)	1933	F	28	R hypothenar	excision
Ackerman	(1)	1958	F	39	R hypothenar	amputation
Carpenter & Lublin	5	1967	F	32	L PP (4)	amputation
Concalves	(8)	1974	F	23	L PP (2)	amputation
Mc Carthy *et al.*	(16)	1974	M	40	R PP (2)	amputation
Johnson & Lawrence	(10)	1975	M	38	L hypothenar	excision
Goldman	(7)	1976	F	24	R PP (2)	amputation
Ogilvie-Harris & Fornasier	(15)	1980	M	18	thumb	excision
Schecter *et al.*	(18)	1982	F	23	R PP (3)	amputation
Schecter *et al.*	(18)	1982	F	25	L MP (3)	amputation
De Smet & Vercauteren	(6)	1984	F	58	L PP (3)	amputation
Kovack *et al.*	(12)	1986	F	29	R PP (1)	excision
Pater & Desai	(16)	1986	F	35	L PP (5)	amputation
Arnaud	(3)	1987	F	61	L hypothenar	excision
Kai *et al.*	(11)	1987	M	35	R metacarpal (3)	excision
Bulsrode *et al.*	(4)	1984	F	30	L midpalm	excision

PP = proximal phalanx ; MP = middle phalanx ; L = left ; R = right ; M = male ; F = female ; ( ) = ray.

Bone scan demonstrated an isolated, well-demarcated area of increased uptake at the left second metacarpal distally (fig. 3). Excision of the tumor was performed through a dorso-ulnar approach. The extensor apparatus had to be mobilized. Macroscopic examination showed a grayish white, glistening tumor. The underlying sclerotic bone was curetted.

Histological examination again revealed the characteristic phenomenon of peripheral bone maturation. Three zones were present : the central very cellular zone (fig. 4A) consisted of a rapid proliferation of undifferentiated fibroblasts, lying in bundles. Cytological detail showed spindle-shaped cells with some anisonucleosis. Mitotic figures were rare.

The intermediate zone had a stroma with a more myxoid aspect, resembling immature cartilage and osteoid tissue (fig. 4B). Toward the outer zone, the new bone was mature, showing well-differentiated bone trabeculae (fig. 4C). The surrounding soft tissues were compressed, but there was no evidence of invasion. The patient is still disease-free after 2 years.

Case 3

This case has been described previously (6). The female patient was 58 years old, with a painful swelling at the base of the third finger. Due to functional impairment and doubts about the diagnosis, a ray resection was performed. The diagnosis was histologically confirmed.

DISCUSSION

Pseudomalignant myositis ossificans is a benign soft tissue tumor of unknown etiology, with formation of heterotopic ossification (1). There is often no history of trauma (2, 7, 13, 14, 15, 17).

Clinically, there is usually a rapid development of swelling and pain, though sometimes the swelling can be slowly progressive for months. Localization in the hand has been fully described in 16 cases (see table and fig. 5). Young females are usually affected, with a predilection for proximal phalanges and the hypothenar region (fig. 6). The recent extended radiological reviews of Schütte

and Van Der Heul (19) and Nuovo *et al.* (14) mentioned respectively 14 and 7 cases in the hand.

The radiographic findings depend on the age of the lesion. In the early stages radiographs may show soft tissue swelling. Later patchy calcification appears, more often at the periphery of the lesion, and may eventually form an incomplete bony shell separated from the underlying bone by a thin radiolucent line. Subperiosteal new bone may form on the adjacent cortex which is usually intact, but occasionally is locally eroded (18). Computed tomograms demonstrate the zone phenomenon (20).

This lesion is often mistaken for an infection or a malignant tumor, as parosteal osteosarcoma or chondrosarcoma, often resulting in an amputation (see table).

Parosteal osteosarcoma in the hand most commonly occurs in the metacarpals (12). Only anatomopathological examination can make the diagnosis of pseudomalignant myositis ossificans, by demonstrating the "three zones of Ackerman" ; this typical zoning effect is characterized by a highly cellular central area surrounded by a zone of osteoid tissue, which in turn is surrounded by a layer of mature bone.

We think that needle biopsy is contraindicated with this type of lesion, for, if the biopsy specimen consists of tissue from the central proliferating zone only, the differential diagnosis with sarcoma may not be possible (9). Excision biopsy of the tumor and the block of tissue in which it lies, seems to be the treatment of choice. Metastases have not been reported until now. Recognition of this tumor can avoid amputation.

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SAMENVATTING

L. DE SMET, G. MAES, G. FABRY. Pseudomaligne myositis ossificans van de hand.

Wij melden twee nieuwe gevallen van myositis ossificans van de hand. Het letsel wordt vaak als een maligne tumor beschouwd. De diagnose berust op het histologisch beeld. Door lokale excisie konden we beide patiënten behandelen, zonder spoor van recidief na 18 en 24 maand.

RÉSUMÉ

L. DE SMET, G. MAES, G. FABRY. Myosite ossifiante pseudomaligne de la main.

Deux nouveaux cas de myosite ossifiante de la main sont rapportés. La lésion est souvent confondue avec une tumeur maligne. Le diagnostic est confirmé par l'examen histologique. Une excision locale a obtenu 2 guérisons, sans évidence de récidive après respectivement 18 et 24 mois.