

Case Report

Acute Metacarpal Osteomyelitis in Children: A Case Report and Review of the Literature

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Abstract: Osteomyelitis is an hematogenous infection that mainly affects the long bones. The location at the level of the hand is exceptional and can cause the problem of differential diagnosis with other injuries especially local such as phlegmon. We report the case of a 12-year-old girl who consults for a tumefaction of the right hand with local signs of inflammation and a temperature of 39° evolving for 5 days following a mild trauma. Laboratory tests showed white blood cells at 11,400 and a CRP at 34. The X-ray of the hand was without abnormalities. On ultrasound, no collection was observed. The scan of the hand done two days after admission shows a broken subperiosteal abscess. Surgical exploration by a palmar approach showed a ruptured subperiosteal abscess in the soft parts opposite the third metacarpal bone and allowed drainage. Bacteriological examination isolated a staphylococcus aureus. The outcome under suitable antibiotic therapy was favorable. At the follow-up of one year, the child has a good function of his hand. Osteomyelitic metacarpal localization is rare. It must be suspected especially in the case of painful inflammatory swelling of the hand with repercussion on the general condition. The treatment is surgical. Evolution is most often favorable. A short metacarpal is feared if there is a damage of the growth plate.

Keywords: Osteomyelitis, metacarpus, subperiosteal abscess, drainage.

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INTRODUCTION

Acute osteomyelitis (AOM) is a hematogenous infection of the bone that preferentially affects the metaphysis of long bones. The lower limbs are more affected by this condition [1].

The metacarpal location is exceptional; only 9 cases have been reported in the literature [2-9]. In this paper, we present a second case supported in our service.

CLINICAL CASE

We report the case of a 12-year-old girl admitted for swelling of the right hand following a trauma dating back 5 days.

The physical examination showed edema of the dorsal aspect of the hand with the presence of local inflammatory signs. The gentle mobilization of the wrist and fingers was painless. The hemodynamic state was stable with a fever estimated at 39 °.

The biology was disturbed with leukocytes at 11,400 elements / mm³ x 1000, C-reactive protein (CRP) at 34 mg / L and a sedimentation rate of 60 in the 1st hour.

The standard radiograph was without abnormalities. Ultrasound did not show any soft tissue collection or subperiosteal abscess. The child had two sets of blood cultures. Immobilization and antibiotic therapy with amoxicillin-clavulanic acid and gentamycin were initiated.

Faced with the persistence of the fever and the non-improvement of the local state after 2 days, we completed with a CT scan which showed a poorly limited collection of 22.5 x 12 x 6 mm opposite the diaphysis of M3 without image of osteolysis neither intra-articular effusion (Figure 1).

Surgical exploration by a palmar approach upstream created an abscess under periosteum ruptured in the soft parts opposite M3. The patient underwent

intramedullary and soft tissue lavage, drainage (Figure 2) and immobilization with flattened sleeve splint.

The germ isolated from the surgical sample was Staphylococcus aureus. The outcome was favorable under adapted antibiotic therapy with regression of

clinical symptoms and normalization of CRP from the first week.

At the follow-up of one year, the function of the limb was preserved with complete fatty tissue (Figure 3). The X-ray showed a presence of an involucrum of the diaphysis of the right 3rd metacarpal (Figure 4).

Table I: The nine cases of metacarpal osteomyelitis published in the literature

Author	Age / gender	Ground	location	Mechanism	Germ	Processing	Function al result	Radiological result
Herlong et al 1990 [2]	26 months / F	Sickle cell anemia	M1 straight	hematogenous	E.coli	Surgery + ATB	Normal	Normal
Bickel et al 1993 [3]	10 months / M	-	M3 straight	hematogenous	Coccidioides immitis	Surgery + ATB	Lost to follow-up at 3 months	Lost to follow-up at 3 months
Keret et al 1998 [4]	9 years / M	-	M3 left	Animal bite (dog)	Bartonella henselae	ATB	Normal	Normal
Aebi and Ramilo 1998 (1st case) [5]	5 years / F	-	M3 left	Chickenpox lesions	staphylococcus aureus	Surgery + ATB	Normal	Expansion and periosteal reaction
Aebi and Ramilo 1998 [5]	2 years / M	-	M3 left	Chickenpox lesions	Streptococcus pyogenes	Surgery + ATB	Normal	Normal
Zitoun et al 2003 [6]	6 years / M	-	M4 left	Trauma	Staphylococcus aureus	Surgery + ATB	Normal	shortening of the metacarpus
Colomina et al 2011 [7]	22 months / M	Chronic septic granulomatosis	M4 straight	hematogenous	Serratia marcescens,	Surgery + ATB	Normal	shortening of the metacarpus
Zribi et al 2012 [8]	18 months / NP	Chronic septic granulomatosis	M4 straight	hematogenous	staphylococcus aureus	Surgery + ATB	Normal	shortening of the metacarpus
Zribi et al 2013 [9]	2 months / M	-	M4 straight	hematogenous	Serratia. marcescens	Surgery + ATB	Normal	shortening of the metacarpus



Fig 1: Poorly limited collection of 22.5 x12 x 6 mm opposite the diaphysis of M3, identified with the CT Scan



Fig 2: Washing by intramedullary trepanation of the 3rd metacarpal



Fig 3a: The graspe is complete



Fig 3b: Full and symmetrical palmar flexion of the wrist

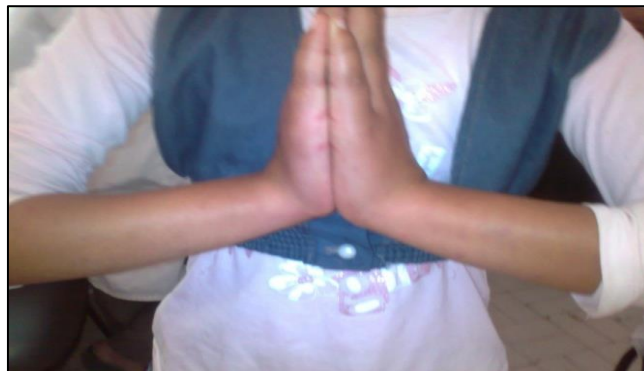


Fig 3c: Full and symmetrical dorsiflexion of the wrist



Fig 4: Radiography of the right hand from the front and in profile: shows an unshortened 3rd metacarpal, provided with a multi-lamellar bone opposition (the involucrum)

DISCUSSION

The metacarpal location of AOM is extremely rare, the following table (Table I) summarizes the 9 cases published in the literature to date.

The traumatic context was only present in the two cases described by our team [7]. It is believed that the trauma favors by the hyperemia that it causes, the secondary localization of the germ passed through the blood.

An underlying pathology was observed in five cases: one case of sickle cell disease, two cases of chronic septic granulomatosis [7, 8] and two cases of chickenpox lesions [5].

The rarity of this localization leads to confusion with other regional affections [9], namely phlegmon, tenosynovitis ... but by suspecting AOM in front of any febrile bone pain, the diagnosis will be easy and the management will be within adequate timeframes, the only guarantees of a favorable development.

Staphylococcus Aureus was the most implicated germ [5, 7, 9]. *Serratia Mercesens* has been isolated from two children with chronic septic granulomatosis [7, 8].

Surgery associated with antibiotic therapy was the rule in the presence of an abscess under the periosteum. Shortening of the metacarpal is feared if the growth cartilage is affected [6-9] but without significant functional impact.

Declaration of interests: The authors declare that they have no conflicts of interest in relation to this article.

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