

A Rare Atraumatic Case of Osteomyelitis of the Carpal Bones

Sabin Yadav, Naveed Ahmed, Clare Carpenter
University Hospital of Wales

Abstract:- Osteomyelitis of the carpal bones is a rare condition and most commonly occurs in cases of penetrating injury. We report a case of an eleven-month-old boy who presented with a vague history of trauma and not actively using his right hand. No bony changes were noted on the X ray. The Patient was brought in again 5 days later with the same complaints during which examination revealed grossly restricted movement of the right wrist, a repeat X-ray raised the suspicion of some lysis on the hamate which was later confirmed by ultrasound. MRI confirmed osteomyelitis of the distal end of the hamate with additional finding of involvement capitate and fluid in the carpal tunnel. He then underwent right carpal tunnel decompression. Blood cultures grew gram-negative coccobacillus. However, there was no growth from the sample from the wrist. He was treated with IV antibiotics in the hospital which was switched to oral antibiotics. (Total 4 weeks duration).

He was followed up for 1 year with repeat x-rays which were normal and he has had a full recovery.

This case highlights the importance of considering osteomyelitis as a differential diagnosis even in the absence of trauma.

I. CASE PRESENTATION

An eleven-month-old attended the emergency department with an isolated complaint of atraumatic reduced range of movement of the right wrist. His inflammatory markers were normal. X-ray images taken failed to demonstrate any abnormality(fig.1) hence the patient was discharged. He reattended twice with the same complaint, a repeat x-ray(fig.2) and an ultrasound(fig.3) raised suspicion of osteomyelitis of the capitate bone. MRI confirmed osteomyelitis along with fluid in the carpal tunnel(fig.4). The patient was transferred to a pediatric orthopedics department within a tertiary center. He underwent surgical drainage; intraoperative findings were hyperaemia of the paratenon and epineuron. He was kept on antibiotics for a total period of four weeks. More than one year later he has regained full range of movement and no residual lucency in the x-ray. (fig.5)

II. DISCUSSION

Osteomyelitis of the hand and wrist represents 10% of all cases, the majority of which is due to direct inoculation of bacteria secondary to trauma.¹ Hematogenous spread causing osteomyelitis is rare but is seen more commonly in children. ² Staphylococcus aureus remains the most commonly isolated organism.³ Early recognition and management is essential as it can rapidly progress, having a potential severe disabling effect and require multiple interventions.⁴

Osteomyelitis of the hand and wrist is approached with lower suspicion in cases of wrist pain, especially in the absence of trauma. As a result, diagnosis is often quite delayed from the onset of symptoms. Reported cases of hand and wrist osteomyelitis are described with localized pain and stiffness without fever, chills, malaise, and night sweats. This patient had a similar history of decreased use of the affected wrist without any prodromal signs and symptoms.

X-ray has low sensitivity and specificity, as many as 80% of those presenting with osteomyelitis will have normal radiographs within the first two weeks; ⁵ hence, further imaging with MRI is recommended where there is high suspicion of underlying pathology (90% sensitive, 70-80% specificity).⁶ MRI confirmed osteomyelitis of the hamate bone, in this case.

Bone biopsy remains the gold standard and treatments are tailored by culture and sensitivities. As a consequence of this being a rare condition, the guidelines for treatment of carpal bone osteomyelitis are not clearly defined. Treatment options include: antibiotics and surgery, which depend on the patient's clinical condition and the expertise of the clinician.

III. CONCLUSION

In our case report, carpal osteomyelitis in an 11-month-old was adequately treated with surgery and a total of 4 weeks of antibiotics. Follow-up with clinical examination and repeat X-ray shows resolution and the patient had a full recovery. This case demonstrates the efficacy of prolonged antibiotics in a case of carpal osteomyelitis. Due to this being a rare case, it can be treated as a single retrospective

study; further cases and studies are needed to look at the functional outcomes of varying treatments of hand osteomyelitis (surgery Vs antibiotics).

Osteomyelitis is not considered high on the list of differentials of patients presenting with hand or wrist pain and considering the impact on the functional status of the patient. Clinicians need to be aware of osteomyelitis as a differential diagnosis of hand and wrist pain.



Fig 1: X Ray on Initial Presentation



Fig 2: X-ray 2 Weeks after Initial Presentation



Fig 3 : US Wrist 2 Weeks Post Initial Presentation Confirming Eroision of Hamate

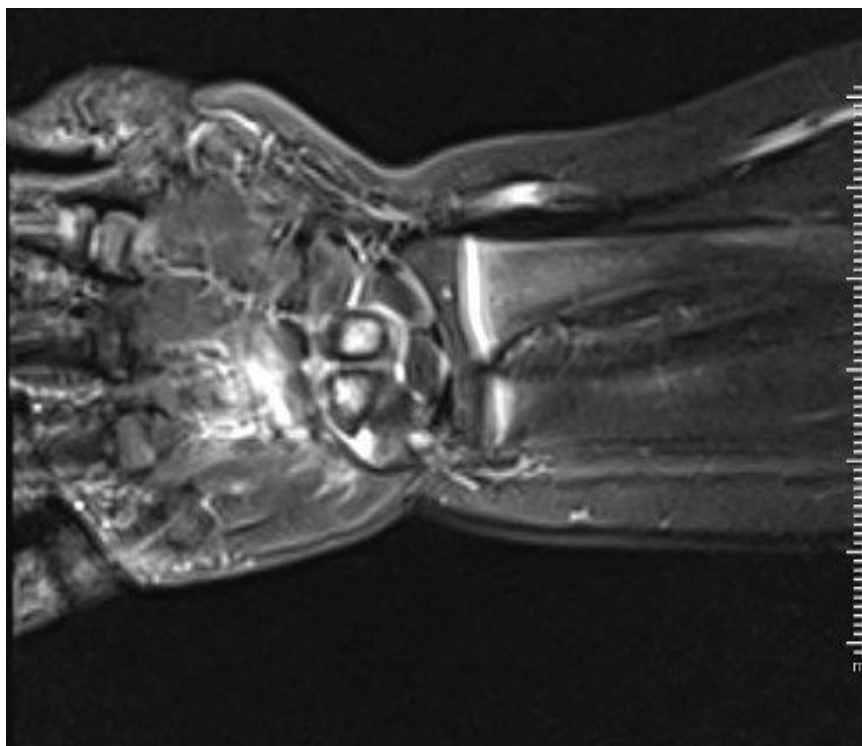


Fig4: MRI 2 Weeks Post Initial Presentation showing Osteomyelitis of Hamate with Distal Eroision, Fluid/Edema in Carpal Tunnel



Fig.5: X Ray >1 Year Follow Up

REFERENCES

- [1]. Copeland R, Blanchard E, Saito P. A Rare Case of Carpal Osteomyelitis in a Spinal Cord Injury Patient: A Case Report. *Cureus*. 2023;15(3):e36283. Published 2023 Mar 17. doi:10.7759/cureus.36283
- [2]. Conterno LO, Turchi MD. Antibiotics for treating chronic osteomyelitis in adults. *Cochrane Database of Systematic Reviews* 2013, Issue 9. Art. No.: CD004439. DOI: 10.1002/14651858.CD004439.pub3.
- [3]. McDonald LS, Bavaro MF, Hofmeister EP, Kroonen LT. Hand infections. *J Hand Surg Am*. 2011;36(8):1403-1412. doi:10.1016/j.jhsa.2011.05.035
- [4]. Pinder R, Barlow G. Osteomyelitis of the hand. *Journal of Hand Surgery (European Volume)*. 2016;41(4):431-440. doi:10.1177/1753193415612373
- [5]. Jaramillo D. Infection: musculoskeletal. *Pediatr Radiol* 2011;41 Suppl 1:S127-34. 10.1007/s00247-011-2001-y [PubMed] [CrossRef] [Google Scholar] [Ref list]
- [6]. Lee YJ, Sadigh S, Mankad K, Kapse N, Rajeswaran G. The imaging of osteomyelitis. *Quant Imaging Med Surg*. 2016; 6(2): 184-198. doi:10.21037/qims.2016.04.01