Clinical Quiz

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Kienböck's disease

Clinical Presentation

A 15-year-old male patient presented to the orthopaedic outpatient department with complaints of pain and swelling over the dorsum of the left wrist for the last 3 months. The movements at the wrist were painfully restricted with decreased grip strength. Passive dorsiflexion of the middle finger produced pain. There was no history of trauma.

Figure 1 - Anteroposterior x-ray of both hands showing increased density, collapse, and fragmentation of the lunate on the left side (arrow).

Questions

1. What is the diagnosis?

2. What are the differential diagnoses?

3. What is the management?

Answers

1. ***Diagnosis.*** This 15-year-old male patient has Kienböck's disease of the left wrist. Passive dorsiflexion of the middle finger produces characteristic pain. Tenderness present directly over the lunate bone.
2. ***Differential dignoses.*** It is important to rule out other conditions with a similar appearance: Ulnocarpal impaction syndrome, or Preiser's disease (osteonecrosis of the scaphoid). ***Diagnosis***. Is usually based on suggestive history and physical examination, then x-rays and MRI. Most patients with Kienböck's disease present with wrist pain and swelling over the wrist. There is usually tenderness directly over the lunate bone. Radiographic findings include collapse and sclerosis of lunate with progressive loss of height and fragmentation of bone (**Figure 1**).
3. ***Management.*** The treatment of Kienböck's disease depends on the radiographic stage. Non-operative treatment consists of immobilization and anti-inflammatory medications in mild cases. More advanced disease is usually treated operatively.[1] i) Lunate excision with or without replacement. ii) Joint-levelling procedures. iii) Intercarpal fusions. iv) Revascularization. v) Salvage procedures (proximal row carpectomy). vi) Others: wrist arthrodesis, radial shortening osteotomy, neurectomy of the terminal branch of posterior interosseous nerve, distraction histogenesis.[2]

Discussion

Kienböck's disease involves collapse of the lunate due to vascular insufficiency and avascular necrosis. It is named for Dr. Robert Kienböck, a radiologist in Vienna, Austria who described osteomalacia of the lunate in 1910.[3] The disease usually presents in adults between the ages of 20-40 years and is rare in children.[4] The vascular supply of the lunate has been studied by Gelberman.[5] It consists of both extraosseous and intraosseous vessels running in the dorsal and volar radiocarpal ligaments. Three vessel patterns of intraosseous supply have been noted. In 70% of lunates (X or Y pattern), in the remaining 30% (I pattern), which theoretically places these lunates at increased risk of losing vascular supply. The disease has not been reported following perilunate dislocations where the vascular supply has been damaged completely. It is usually unilateral and is due to: 1) Vascular impairment: a) single or repetitive microfractures, causing disruption of blood supply. b) Recurrent compression of lunate between capitate and distal radius, disrupting the intraosseous structures. 2) Extreme wrist positions and/or repetitive compression loading. 3) Associated with diseases like gout, sickle cell anaemia, and cerebral palsy. 4) Negative ulnar variance - predisposing factor.

References

1. Miller MD, editor. Review of orthopaedics. 4th ed. Philadelphia (PA): WB Saunders; 2004. p. 392.
2. Meena D, Saini N, Kundanani V, Chaudhary L, Meena D. Distraction histiogenesis for treatment of Kienböck's disease: A 2- to 8-year follow-up. ***Indian J Orthop*** 2009; 43: 189-193.
3. Kienböck R. Über traumatische Malazie des Mondbeins und ihre Folgezustande: Entartungsformen und Kompressionfrakturen. ***Fortschritte auf dem Gebiete der Rontgenstrahlen*** 1910-1911; 16: 77-103.
4. Divelbiss B, Baratz ME. Kienböck disease. ***J Am Soc Surg Hand*** 2001; 1: 61-72.
5. Gelberman RH, Bauman TD, Menon J, Akeson WH. The vascularity of the lunate bone and Kienböck's disease. ***J Hand Surg Am*** 1980; 5: 272-278.