Delayed identification of an isolated paediatric capitate fracture

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ARTICLE INFO

Keywords:
Paediatric
Trauma
Carpus

SUMMARY

Fractures of the capitate bone are the second most common injury to a child's wrist but are rarely encountered in isolation. This is reflected in the paucity of described cases in the literature. Their true incidence is unknown as they often do not appear on plain radiographs and may heal without immobilisation.

The easiest way to detect these fractures is with an MRI scan. The authors present a rare case of isolated capitate fracture that was initially missed on plain films. This case is important as it highlights the need for a high index of suspicion in paediatric patients with unresolving wrist pain.

Case report

A 13-year-old girl had a fall at school and landed on her right hand which bent underneath her. The patient presented to the emergency department with pain and reduced range of movement of the right wrist. On examination there was no swelling, bruising, redness or laceration. There was only reduced active and passive extension of the wrist. There was no specific tenderness over the anatomical snuffbox.

Radiographic views at the time of presentation (Fig. 1) were interpreted by the Emergency Department consultant as showing no bony injury. Because of the child's age and the presence of growth plates, a second opinion was sought from a consultant radiologist. No bony injury was detected. A Sclerotic line was identified in the trapezium which was thought to be developmental and less likely to be a fracture. Although no bony injury was initially identified, the patient was issued with a splint as a precaution.

The patient was seen in fracture clinic a week later. Due to the mild nature of the patient's pain, the absence of any evidence of fractures on plain films and the lack of pain at the anatomical snuffbox, the patient was discharged.

The patient remained symptomatic for 6 weeks. She was referred back to an orthopaedic consultant, who requested an MRI arthrogram (Fig. 2) which revealed an undisplaced fracture of the capitellum. The patient's wrist was immobilised for 8 weeks. This led to an eventual resolution of the patient's symptoms. An MRI taken a year post injury (Fig. 3) revealed union at the fracture.

Discussion

Isolated fractures of the capitate in paediatric patients are incredibly rare. There are only 2 reported cases in the literature [1,2]. They usually present in association with other fractures within the carpus. There is often hard to establish a diagnosis, primarily due to the difficulty in interpreting plain radiographs.

Delays in diagnosis are common. On the whole, the majority of paediatric carpal injuries heal uneventfully with simple cast immobilisation, though if they are displaced they may require open reduction and internal fixation.
Fig. 1. Radiographic views at the time of presentation appeared to show no obvious bony injury.

Fig. 2. A T1 Weighted image showing a clear transverse fracture line through the waist of the capitate, with no evidence of avascular necrosis.
The difficulty in diagnosing such fractures on plain films is made evident by this case. Clinicians should proceed cautiously in the presence of unresolved vague symptoms and apparently normal X-rays. Although these fractures are rare, advanced imaging such as an MRI should be sought early on in order to proceed with the appropriate management.

Conflict of interest statement

None.

References

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Fig. 3. An MRI taken a year post injury revealed union at the fracture.