Concomitant Ulnar Shaft and Humeral Condylar Fracture in a 6 Year Old Child

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Abstract

We present a case of a 6 year old child with a history of mild trauma to the elbow which turned out to have ipsilateral undisplaced ulnar shaft and humeral condylar mass fractures. The fractures were managed conservatively and the patient recovered without any residual deficit. This is a rare injury with only 5 similar cases reported in literature. It may be considered a Monteggia variant.

Case Report(s)

A 6 year old female child reported to the casualty department with a history of fall from a chair on her extended arm with mild swelling and bruising of the elbow, tenderness of the forearm and joint laterally and no neurovascular deficit. Radiographs revealed undisplaced fractures of the ulnar shaft and lateral humeral condylar mass (Fig 1, 2). The patient was managed by an above elbow backslab for 3 weeks with the elbow in flexion. The slab was removed at 3 weeks and active range of motion exercises were instituted. The patient made an uneventful recovery.

Discussion

Monteggia fracture-dislocation is an elbow trauma that constitutes less than 5% of upper extremity fractures, which is described as a radio-humeral dislocation associated with diaphyseal ulnar fracture. While it is seen more commonly in children compared to the adults, it may be seen in every age. This pathology, which has been first described by Monteggia in 1814, was classified into 4 main types and 2 equivalent lesions by Bado [1]. The scope of the description of equivalent lesions by Bado has been widened by Reckling [2] and various fracture variations have been described in many manuscripts. [3–11]. Fractures of the lateral humeral condyle make up 17% of all elbow fractures in children and mostly occur between 2 and 14 years [12]. Milch classified these fractures into type I where the fracture line courses laterally to the trochlea through and into the capitellar-trochlear groove. These injuries are rare but usually stable. In type II injuries the fracture line extends into the area of the trochlea and produces inherent instability of the elbow [13]. The injury is an intra-articular transepiphyseal fracture classified as Salter Harris IV [14]. The mechanism of injury is usually a fall on the outstretched hand with forced varus angulation of the elbow in supination and extension. Diagnosing the injury radiologically may be difficult since the region is largely cartilaginous and not visible on plain radiography. These injuries are associated with several complications including non-union with subsequent cubitis valgus, mal- union including varus deformity, avascular necrosis of the fragment and tardy ulnar neuropathy [15, 16]. Treatment of lateral condyle fracture has traditionally been divided between closed treatment with casting for minimally displaced fractures and open reduction and internal fixation for displaced fractures [14]. In children, similar to Monteggia fracture dislocation, it is not possible to fully outline the trauma mechanism in equivalent lesions, as well. However, during the initial presentation of the patient; position of the forearm, and the position of the distal portion of fracture and the inclination of the radial head dislocation in radiographs, may provide useful data. Another mechanism held responsible is, known to be traumas having a direct effect on ulnar diaphysis. Greenstick fracture was reported to occur as a result of this [4]. Tompkins [17] proposed over traction of biceps muscle as the reason of radial head dislocation due to falling with an open hand. Bado Type 3 fracture-dislocations are seen due to varus stress on elbow during falling with an open hand while elbow is extended [18]. The mechanism of lateral humeral condylar fractures and Bado Type 3 fracture-dislocations are similar [7]. As a result of this mechanism, lateral dislocation in radiocapitellar joint and subsequent rupture in the lateral condyle may occur. If adequate treatment is not applied, similar to Monteggia fracture-dislocation, equivalent lesions may lead to poor clinical and radiographic results. There is no standard treatment protocol for equivalent lesions, for which results are obtained through case reports except several case series. Whereas early closed reduction provides good and excellent results in
Monteggia fracture dislocations, the results in the literature for equivalent lesions are known to be different [2, 19]. In children, Monteggia fracture-dislocations may occur in various forms and as uncommon fracture variations. In order to avoid the complications by establishing an early diagnosis and treatment, a good understanding of the fracture patterns and accurate diagnose of the lesions are required. Currently, as for the Monteggia fracture-dislocations, closed reduction is the first choice of treatment for equivalent lesions. Following conservative treatment, reduction of radial head should be controlled by a series of radiographs. If adequate reduction cannot be achieved after closed reduction of radial head dislocation or associated fractures, surgery should be considered. In the present study, conservative treatment was preferred with good results. Requirement of surgery has been associated with failure of reduction in radial head dislocation or fracture, annular ligament interposition or tear, displaced olecranon or metaphyseal ulnar fracture and lateral humeral condylar fracture especially in patients with Type 3 equivalent lesions. We aim to highlight a rare injury which maybe missed on cursory examination but is actually a Monteggia variant.

References

Illustrations

Illustration 1

AP radiograph showing the ulnar shaft and lateral condylar mass fracture

Illustration 2

Lateral radiograph showing the ulnar shaft and lateral condylar mass fracture
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