Archives of Orofacial Sciences
The Journal of the School of Dental Sciences
Universiti Sains Malaysia

Arch Orofac Sci (2014), **9**(1): 44-46.

Case Report

Incidental finding of co-existing life-threatening pathology during facial trauma assessment

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Revised edition: 29/01/2014. Accepted: 06/05/2014. Published online: 06/05/2014.

Abstract Paediatric facial traumas are often accompanied by other intracranial and non-head injuries. Use of Computed Tomography (CT) has increased diagnostic accuracy when compared to plain radiographs alone. Coexisting anomalies can sometimes be a chance finding from the imagings and this highlights the need of a formal reporting by a radiologist. We report a case of a traumatic unilateral condylar fracture with a coexisting life-threatening abnormality detected from careful assessment of the imagings.

Keywords: aneurysm, facial fractures, imaging, paediatric.

Introduction

Pediatric facial fractures are thought to be uncommon in comparison with adults (Anderson, 1995). They comprise 5-15% of all facial fractures, but an estimated 11.3% of pediatric emergency room visits are a result of craniofacial injuries (Haug and Foss, 2000). We report a case of a traumatic unilateral condylar fracture in a child with a co-existing life-threatening abnormality not associated with the trauma, detected during careful assessment of the imaging.

Case report

A 12-year-old boy was referred to the Craniofacial Department, Women's and Children's Hospital for management of right condylar fracture. He had a history of fall from his scooter and hit his chin on the concrete two days earlier. He transiently lost consciousness in the incident and sustained fracture of right mandibular condyle. He also had bleeding from his right ear and laceration wound over his chin. His history revealed a previous hospital admission following a fall for which he had a head injury and facial bruising and was left with a frontal osteoma two years earlier. However, he did not exhibit any neurological signs and symptoms ever since that episode.

On examination in the Emergency Department, he was alert, comfortable and orientated. There was swelling over the right preauricular area with tenderness when opening his mouth. His mouth opening was approximately 20 mm with deviation to the right side. Intraorally, there was 1 mm open bite on the right side when closure was attempted.

Computed tomography (CT) was undertaken in view of the head injury and to visualize the fracture, which was poorly seen on the orthopantomogram (OPG). CT showed minimally displaced intracapsular fracture of the right condyle consistent with the clinical diagnosis and this was subsequently managed by orthodontic brackets and elastics. However, examination of the intracranial views showed an ovoid hyperdensity in the region of the anterior cerebral arteries. Discussions with the neurosurgical team suggest further evaluation and CT angiogram was performed. The images obtained demonstrated a saccular aneurysm arising from the A2 segment of the right anterior cerebral artery measuring

6 mm in diameter with a narrow neck (Fig. 1). A small artery was seen to be arising from the neck of the aneurysm and travelling anteriorly within the inter-hemispheric fissures. The neurosurgical team was concern about rupture of the weakened vascular wall leading to a potentially fatal episode of intracranial bleed. The team decided that the aneurysm was therefore not suitable for endovascular treatment.

The aneurysm was managed surgically by clipping via a frontal craniotomy (Fig. 2). At the same time, cranioplasty of the frontal osteoma was performed by the craniofacial team. His recovery was uneventful and was well for discharge one week postoperatively.

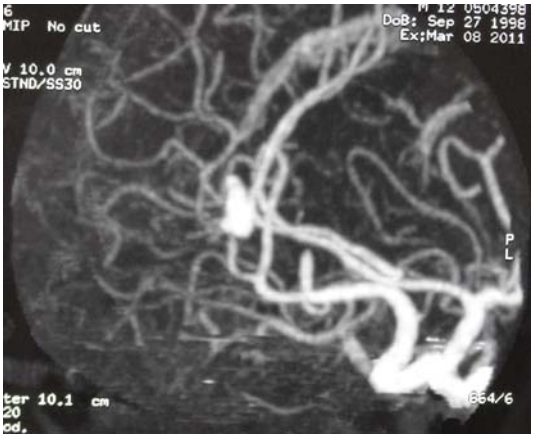

Fig. 1 Aneurysm arising from right anterior cerebral artery.

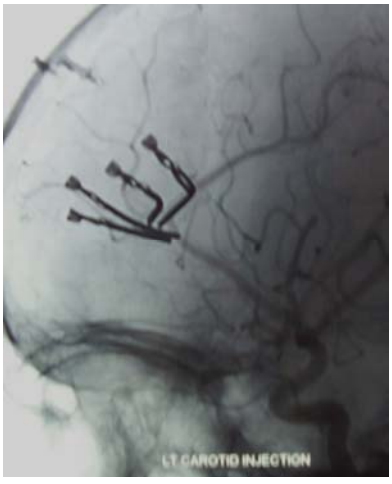

Fig. 2 Clipping of anterior cerebral arteries.

Discussion

Clinicians who are managing paediatric trauma should bear in mind that intracranial and other craniofacial traumas in children occur more frequently than commonly thought. In a study comprising 277,008 paediatric trauma admissions, 12,739 paediatric facial fractures (4.6%) were detected; clearly demonstrating the severity of associated injuries (Imahara *et al.*, 2008). Facial soft tissue injuries constitute almost half of the sample (45.9%) and was five times more commonly seen than in patients without facial fractures. Additionally, brain injury was observed in 32.3% of the patients and occurred twice as commonly in patients with pediatric facial fractures. Similarly, severe associated organ specific injuries were also observed in twice the number of patients in facial fractures. Almost a third (27.3%) of the sample sustained concomitant fractures of the skull base which was nine times higher than the group with no facial fractures (3.3%). Cervical spine fracture (3.3%) and blunt cerebrovascular injury (1.0%) presented less commonly. However, it did show a marked increase of incidence in the patients with facial fractures compared to those without facial fractures (Imahara *et al.*, 2008).

Patterns of facial injuries in children differ from those in adults because of anatomical and physiological differences between the two age groups (Alcalá-Galiano *et al.*, 2008). Diagnosis of facial fractures using plain radiographs radiographic imaging can be difficult and this results in under-reporting (Holland *et al.*, 2001; Zimmermann *et al.*, 2006). Interpretation of the pediatric facial radiographs is especially challenging and if such investigations are undertaken; computed tomography (CT) may be helpful to assist or confirm the initial diagnosis (Thompson *et al.,* 2007). Careful evaluation of the imaging is important so as not to miss any other fractures or other associated anomalies. All these contribute to under-diagnosis and under-reporting of the fractures. Coexisting anomalies highlight the need for formal radiological reporting by a consultant radiologist. In the

present case, though the brain aneurysm was not a direct result of the current trauma, careful evaluation of the CT had revealed a life-threatening anomaly. It was promptly managed and thus, a potentially fatal episode was averted.

Conclusion

In conclusion, the present case highlights a few crucial points. Firstly, diagnosing facial trauma in children can be quite challenging due to the anatomical differences from adult. Usage of CT is justified as this imaging modality of choice has greatly increased the diagnostic accuracy. Secondly, formal assessment of the imaging by a consultant radiologist is crucial to ensure all injuries are recognized and thus proper treatment instituted. Finally, the present case also showed that pathology could also be detected from careful assessment of the imagings.

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