Expert's comment concerning Grand Rounds case entitled “Cervical spine injury in the young child” (Navin Nashiel Ramrattan, F. Cumhur Öner, Bronek M. Boszczyk, René M. Castelein, Paul F. Heini)

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Accepted: 29 March 2012 / Published online: 15 May 2012
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This is a well-written case report and literature review describing a cervical spine and spinal cord injury in a 15-month-old child at the C6–7 level [1]. The paper highlights many of the challenging aspects of treating traumatic cervical spine injuries in infants, toddlers and young children. These challenges span from the time of the initial injury all the way to the treatment and follow-up phases.

I will not reiterate the many specific points mentioned in the “Grand Rounds” portion of the paper except to make some specific comments about the utility of the specific imaging techniques in the posttraumatic scenario.

In a recently published article [2] we describe our experience on assessing the prognostic value of four

imaging modalities (plain X-rays, flexion/extension X-rays, CT and MRI) in clearing the cervical spine in children with severe traumatic injuries. Twenty-four children were analyzed, eight of which were 3 years of age or younger. Our data demonstrated that CT imaging is actually very helpful in determining the stability of the pediatric cervical spine after severe trauma, with MRI less helpful because of high false-positive rates. We recommended an urgent static study (CT) in the initial phase of severe trauma assessment, coupled with a dynamic study (flexion/extension X-ray) later on the patient's hospital course. Obviously, the issues of radiation safety are of concern, but with new generation CT scanners delivering lower doses of radiation, we feel that the radiation risk is outweighed by the utility of ruling out a serious missed injury in a severely injured child. This fact is underscored by the initial CT findings in this case, which showed unilateral facet disruption at C6–7. Obviously, in retrospect, the initial CT finding would have led to early follow-up MRI imaging if it had been detected at that time of the initial read.

The power of the initial trauma CT is underscored by its utility in diagnosing atlanto-occipital dislocation (AOD). Recent work by Pang [3] has given us normal values for the distance between the occipital condyle and the superior articular surface of C1, as well outlining measurements that are consistent with the diagnosis of AOD. Our current practice is to rely heavily on the condyle-C1 interval (CCI) distance to diagnose AOD. Further study is necessary to determine whether this distance is applicable to young children, as the cartilaginous elements may contribute to a falsely high CCI value. However, it is increasingly apparent that a CCI of greater than 4.0 mm is likely diagnostic of AOD. Further imaging, such as MRI, is then necessary to look at the anatomical structures involved in the injury and confirm the diagnosis.

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This case study and Grand Rounds underscores the importance of well-trained and qualified pediatric radiologists and neuroradiologists to evaluate children's trauma imaging. This can be a very difficult task, given the lack of established norms and the individual variation between patients. Case reports such as these help to close the gap between our current level of knowledge and a comprehensive understanding of pediatric cervical spine disease and pathology.

prognostic value of four imaging modalities in clearing the cervical spine for children with severe traumatic injuries. *Childs nervous system*, Online First™ doi:[10.1007/s00381-012-1696-x](https://doi.org/10.1007/s00381-012-1696-x)

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