C2–C3 pseudosubluxation

The C2–C3 interspace and, to a lesser extent, the C3–C4 interspace in children have a normal physiological displacement. In a study of 161 normal children [1], marked anterior displacement of C2 on C3 was observed in 9% of children between 1 and 7 years of age. In some children, the anterior physiological displacement of C2 on C3 is so pronounced that it appears pathological (pseudosubluxation). To differentiate this from pathological subluxation, Swischuk [2] has used the posterior cervical line drawn from the anterior cortex of the posterior arch of C1 to the anterior cortex of the posterior arch of C3. In physiological displacement of C2 on C3, the posterior cervical line may pass through the cortex of the posterior arch of C2, touch the anterior aspect of the cortex of the posterior arch of C2, or come within 1 mm of the anterior cortex of the posterior arch of C2. A Swischuk line passing 2 mm or more behind the anterior cortex of the posterior arch of C2 indicates a pathological anterior displacement of C2 over C3. The planes of the articular facets change with growth. The horizontal orientation of the facet joints along with the relative ligamentous laxity and relatively larger skull than in the trunk in young children contribute to this common finding of pseudosubluxation.

Epidemiology

A retrospective review was performed of 138 patients under 16 years of age admitted with polytrauma via The Helicopter Emergency Medical Service. All patients wore hard collars and underwent immediate horizontal beam lateral cervical spine radiography. Normal and C2/C3 pseudosubluxation groups were defined using standard criteria. The two groups were compared in terms of age, presence of an endotracheal tube, injury severity, and outcome.

There were 108 (78.3%) children in the normal group and 30 (21.7%) in the C2/C3 pseudosubluxation group. No significant differences in sex ratio, intubation status, injury severity, or outcome were found. Patients in the pseudosubluxation group were significantly younger.

In paediatric polytrauma it is essential to establish the integrity of the cervical spine promptly as this will deter unnecessary further imaging and investigation. In our study 21.7% of cases had C2/C3 pseudosubluxation on admission radiographs. We have shown that C2/C3 pseudosubluxation has no significant association with intubation status, injury severity, or outcome. We conclude that C2/C3 pseudosubluxation can be considered a benign variant even in the setting of polytrauma [3].

Treatment

see C2–C3 pseudosubluxation treatment.

1)
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2)
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3)
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