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Abnormal atlantooccipital measurements.

R A Kaufman

AJNR Am J Neuroradiol 1994, 15 (5) 990

<http://www.ajnr.org/content/15/5/990.citation>

This information is current as
of May 30, 2025.

LETTER

Abnormal Atlantooccipital Measurements

I have just had occasion to read the paper "Evaluation of Traumatic Atlantooccipital Dislocations" (1) in the course of preparing a report on this subject in children. I must apologize for not having found this work earlier, but as my last article on this subject was submitted to *AJNR* in January 1987—the month this was published—I had overlooked it until now.

I fear that we have been misquoted. The paper of Lee et al states with reference to direct measurement of the atlantooccipital joint that "Kaufman et al (2) believed that 5 mm was the average value in children, with the upper limit of normal being 10 mm." It goes on to say, "Using 10 mm as the upper limit of normal, we found 5 of the 9 joints that we could measure to be abnormal. However, if 5 mm were used as the cut-off value, then 8 of 9 cases would have been considered abnormal."

What we actually said was, "... we have not yet found a case where that distance in normal children exceeded 5 mm, regardless of age, and in most cases the distance was 1.5–3.5 mm." Nowhere in our paper did we mention 10 mm as the upper limit of normal. In fact, our three children with atlantooccipital distraction injuries measured 9.0 mm, 6.5 mm, and 6.0 mm at their atlantooccipital joints. We subsequently proved our thesis that the normal atlantooccipital distance should not exceed 5 mm in our 1987 paper (3) and cautioned that 4.5- to 5.0-mm distances should be considered borderline and merit careful scrutiny.

We are pleased that Lee et al agree with us that direct measurement of the atlantooccipital junction provides the best method for recognition and diagnosis of distraction and dislocation injuries in children. I have continued to use it with success, having detected at least five additional survivors since 1987.

Robert A. Kaufman
Professor of Radiology and Pediatrics
University of Tennessee, Memphis
Former Director of Radiology
Le Bonheur Children's Medical Center

References

1. Lee C, Woodring JH, Goldstein SJ, Daniel TL, Young AB, Tibbs PA. Evaluation of traumatic atlantooccipital dislocations. *AJNR Am J Neuroradiol* 1987;8:19–26
2. Kaufman RA, Dunbar JS, Botsford JA, McLaurin RL. Traumatic longitudinal atlantooccipital distraction injuries in children. *AJNR Am J Neuroradiol* 1982;3:415–419

3. Kaufman RA, Carroll CD, Buncher CR. Atlantooccipital junction: standards for measurements in normal children. *AJNR Am J Neuroradiol* 1987;8:995–999

Reply

My sincere apology to Dr Kaufman. I did not mean to misquote him, nor was it my intention to state that his method for diagnosing atlantooccipital dislocation was incorrect. The article "Evaluation of Traumatic Atlantooccipital Dislocation" was written at the beginning of my academic career, and without the benefit of electronic word processing. The original manuscript underwent several revisions the old-fashioned way with a typewriter. Footnotes changed numbers from various revisions. I should have been more prudent in making certain that the references and footnote numbers matched.

What was incorrect in the manuscript were the following statements: "Kaufman et al believed that 5 mm was the average value in children, with the upper limit of normal being 10 mm." It was in fact Wholey (1) who stated that "in infants and young children owing to incomplete bone growth this distance may measure up to 1 cm." The correct statement attributed to Kaufman et al (my reference 4) should have been: "Kaufman et al believed that 5 mm was the average value in children, *regardless of age, and in most cases the distance was 1.5 to 3.5 mm.*"

In the conclusion I stated that the Kaufman method was the best in children, and I believe it remains the best. The corrected conclusion should state: "In *children* suspected of having traumatic atlantooccipital dislocation we suggest the Kaufman et al approach of measuring the width of the joint. The upper limit for normal should probably be 5 mm *as suggested by Kaufman.*"

I apologize again for misquoting Dr Kaufman. The error created by the wrong footnote was not caught by me or others. Dr Kaufman is correct. And again I maintain that in children the method in his article is the best regarding traumatic atlantooccipital dislocation.

Charles Lee
Associate Professor of Neuroradiology
Department of Radiology
University of Kentucky
Lexington, KY

Reference

1. Wholey H, Bruwer AJ, Baker HL. The lateral roentgenogram of the neck. *Radiology* 1958;71:350–356