

Abstract #1023.docx

Improving MRI diagnosis following whiplash injury by routine imaging of the cranio-cervical junction in addition to the cervical spine.

Introduction/ Aim:

The cost implications, both in terms of patient suffering and financial costs, of under diagnosis of mechanical damage at the cranio-cervical junction is very large. It is therefore important to ensure that the entire region involved in a hyper-extension injury is fully assessed. The current accepted practice of only MRI scanning the cervical spine is thought to be less than ideal and a new protocol is assessed

Methods and Materials: 50 symptomatic patients 15 - 72 yrs. (Mean 44yrs), previously investigated following hyperextension injury of the neck, who had, had a reportedly normal previous MRI examination of the cervical spine, were examined. Previous MRI examinations comprised sagittal T1 & T2 & axial T2 weighted images from C2 to T1 .

Patients were studied seated in an Upright MRI scanner, using the above sequences with additional sagittal images made with the neck in flexion and extension. Additional coronal and axial images were obtained from the skull base down to the C2/3 level. Further axial images with the head rotated to the right and the left were made.

Spinal alignment, disc integrity, alignment of the atlanto axial-joints and atlanto-occipital joints, alar and cruciate ligament integrity and cerebellar tonsillar station were assessed in all cases. In addition measurement of the clivo-axial angle, Harris interval and Grabb-Oaks measurement were also made.

Results: In over 50% of patients (27), no additional information was gained. In the other 23 patients, 18 showed ligamentous damage at the atlanto-axial joint, of which 12 had dislocation. The other 5 showed instability on the rotation images. 2 of the 23 patients also had atlanto-occipital joint dislocation. Cerebellar tonsillar ectopia was seen in 12 patients.

Discussion: This comprehensive MRI examination demonstrates significant abnormality at the cranio-cervical junction that is otherwise missed on conventional MRI of the cervical spine.

Conclusion: The current practice of limiting imaging to below C2 is inadequate and under-estimates the incidence of post traumatic ligamentous damage. For thorough MRI examination, imaging of the cranio-cervical junction is important, to find or exclude ligamentous damage.