LETTERS TO THE EDITOR

Duraplasty is required for Chiari decompression!

We read the article by Hayhurst et al. on ‘Hindbrain decompression for Chiari-syringomyelia complex: an outcome analysis comparing surgical techniques’ with interest. We found the authors conclusions on bone only decompression interesting and worth discussion. The literature on Chiari decompression strongly supports duraplasty in symptomatic patients with Chiari malformation. We previously reported on a case of orthostasis, with significant differences in supine/standing arterial pressures and suboccipital headaches in a patient with Chiari malformation with full relief of symptoms after ‘traditional’ Chiari decompression surgery: craniectomy, duraplasty and tonsillar shrinkage. With this patient we found intraoperatively that the patients arterial pressure was not affected during bony decompression or durotomy; however, there was a significant effect on arterial pressure when the tonsils were resected. We found that the key component for patients with orthostasis or hypotension is not the bony decompression/expanding the foramen magnum or duraplasty, but rather relieving the ventral compression of the cerebellar tonsils on the brainstem via tonsillar shrinkage. Oldfield et al. with the use of cine MRI on Chiari I malformation patients postulated the cause of symptoms were due to obstruction of CSF flow at the foramen magnum, by the cerebellar tonsils, which plug the subarachnoid space posteriorly, moving downward with each systolic pulse, acting as a piston on the partially isolated spinal CSF and producing a systolic pressure wave in the spinal CSF that acts on the surface of the spinal cord. All patients in Oldfield’s study underwent duraplasty with relief of abnormal CSF flow. In 2003, Sansur et al. demonstrated that the pathology associated with cough headaches in Chiari I malformations is secondary to occlusion of the subarachnoid space at the foramen magnum causing elevated intrathecal pressures, again requiring duraplasty to relieve the symptoms. In closing, we commend Hayhurst et al. on their clinical outcomes, however, we do not support their conclusions of utilizing a bony decompression alone for Chiari patients with only headaches, it does not address the pathophysiology of the headache, which is increased intrathecal pressure secondary to obstruction of free CSF flow in the subarachnoid space, which literature has demonstrated duraplasty relieved the elevated intrathecal pressures. Thus, in our opinion, the literature does not support bony decompression alone for any Chiari patient, and it is up to the neurosurgeon to decide between duraplasty alone or duraplasty with cerebellar tonsillar shrinkage. In addition, we recommend preoperative cine MRI on all Chiari patients.

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References


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Hindbrain decompression for Chiari-syringomyelia complex: an outcome analysis comparing surgical techniques

In response to the letter by Dr Dickerman and Dr Reynolds, we would like to thank them for their interest in our paper. As our paper was a discussion of the varied surgical approaches reported for this difficult condition, further debate stimulated by the paper was our intention.

In response to the comments raised in the letter, we wholly agree that the pathophysiological mechanism of headaches associated with Chiari I malformation is abnormal CSF flow at the craniocervical junction, although a proportion may have in addition raised intracranial pressure. Although cine MRI studies of CSF flow at the foramen magnum relate to the induction and expansion of the spinal syrinx, it is logical that restoration of normal flow dynamics...