Research Update | October 2023

CONQUER CHIARI
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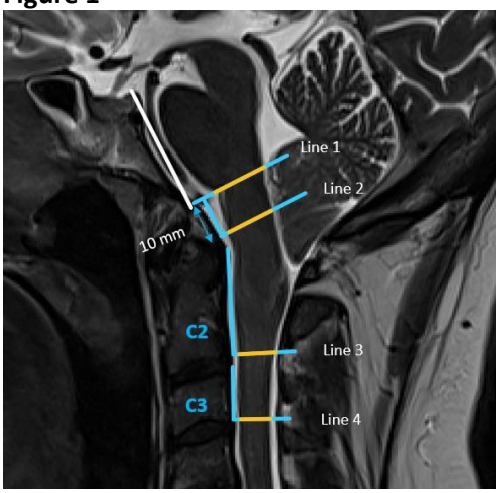
CCRC Study Finds Brainstem Expansion After Surgery

Brainstem and cranial nerve related symptoms are well established effects of Chiari, and largely attributed to the herniated tonsils compressing the nearby neural tissues. However, how much this tissue gets compressed is difficult to establish since images of patients without the herniated tonsils are generally not available. Researchers at the Conquer Chiari Research Center worked around this problem by looking at how much different measures of the brainstem and upper spine change after decompression surgery.

Specifically, they looked at the brainstem volume, two brainstem widths, and two spinal cord widths (Figure 1) of 25 adult patients both before and after surgery. They found a significant difference (expansion) of the overall brainstem volume and the two brainstem widths (Lines 1 and 2), but no significant difference at the levels of C2 and C3. The average changes were small, only 2-4%, but some patients had expansions of 10% or more. In addition, 60% of the patients had an expansion of 5% or more for at least one of the measures.

These results need to be evaluated with caution. Subtle changes such as these can be difficult to measure on MRI and the impact of that level of compression on neural tissue is not clear. However, we do know that Chiari patients experience brainstem related symptoms and MRIS often show the cerebellar tonsils pushed right against the brainstem in patients, so some amount of tissue expansion after decompression surgery would not be surprising.

Figure 1



Source: The effect of posterior fossa decompression surgery on brainstem and cervical spinal cord dimensions in adults with Chiari malformation type 1. Karamzadeh M, Al Samman MM, Vargas AI, Bhadelia RA, Oshinski J, Barrow DL, Amini R, Loth F. World Neurosurg. 2023 Sep 30:S1878-8750(23)01382-7. doi: 10.1016/j.wneu.2023.09.112. Online ahead of print. PMID: 37783305

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Conquer Chiari's research updates highlight and summarize interesting publications from the medical literature while providing background and context. The summaries do contain some medical terminology and assume a general understanding of Chiari. Introductory information and many more research articles can be found in the Conquer Chiari Library.

Conquer Chiari is a 501(c)(3) public charity dedicated to improving the experiences and outcomes of Chiari patients through education, awareness and research.