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CONQUER CHIARI
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Brain Tissue Motion Decreases After Surgery

Researchers at the Conquer Chiari Research Center (CCRC) have found that the motion of the cerebellum and brainstem decreases significantly after Chiari surgery. In healthy people, the brain moves slightly in response to the natural rhythm of the heart as spinal fluid is circulated. Previous studies from the CCRC have shown however that in Chiari patients this motion is amplified in the cerebellum and brainstem. The CCRC has also shown that DENSE MRI is extremely accurate in measuring this motion. Now, in collaboration with Emory University, the CCRC looked at the brain tissue motion of 23 adult Chiari patients both before and after decompression surgery using DENSE MRI. They found that the average peak motion decreased 46% in the cerebellum and 22% in the brainstem. They also found that the maximum peak motion decreased 64% in the cerebellum and 33% in the brainstem. In general the brain tissue motion of the Chiari patients after surgery was in the range of what had been previously measured in healthy controls. While this study clearly shows that surgery alters the brain tissue biomechanics, the amount of motion involved is extremely small in absolute terms. Thus, it needs to be established with further studies whether the extra motion seen in Chiari cases is enough to cause damage and result in symptoms.

Source: Cerebellar and Brainstem Displacement Measured with DENSE MRI in Chiari Malformation Following Posterior Fossa Decompression Surgery. Eppelheimer MS, Nwotchouang BST, Pahlavian SH, Barrow JW, Barrow DL, Amini R, Allen PA, Loth F, Oshinski JN. Radiology. 2021 Jul 27.

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 at www.conquerchiari.org.