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CONQUER CHIARI
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Study Looks For What Causes The Chiari Headache

While Chiari patients suffer from various types of headaches, the one most associated with the condition, and the one that responds best to surgery, is the cough associated headache (CAH). The CAH, also known as the Chiari headache, refers to a relatively short, intense pain in the back of the head, which is triggered by activities such as coughing, straining, singing, exertion, etc. From very early on researchers thought that this type of headache was caused by the herniated cerebellar tonsils being pushed down even more during the triggering activity, thus causing a more severe blockage of the flow of cerebrospinal fluid (CSF) between the brain and spine. This in turn can lead to much higher pressure in the brain and the resultant pain so many of us are familiar with. However, investigating this was difficult due to technical limitations of the imaging equipment.

Now, a Conquer Chiari sponsored study has used advanced imaging to look at the flow of CSF in real time while Chiari patients cough. Specifically, the study used what is known as pencil beam real-time MRI to compare 12 Chiari patients with cough associated headaches to 5 Chiari patients without cough associated headaches and 6 healthy controls. The subjects were imaged for multiple 90 second cycles during which they were told to breathe normally for the first 20 seconds, then cough 6 times, then breathe again normally for the duration of the cycle. The pencil beam MRI captured CSF flow data from the foramen magnum (the opening at the bottom of the skull) to 35mm below (about the level of C3) in 5mm increments. From the pencil beam images, the researchers were able to calculate the total CSF volume flow during three different time periods: the middle of the initial rest period, 5-10 seconds after coughing, and 20-40 seconds after that. They did not analyze the data during the coughing due to the head movements of the subjects.

They found no significant differences during the initial or last time period between the groups. However, during the post-cough period the Chiari patients with cough associated headaches had significantly less flow volume of CSF than both other groups. Interestingly, there was not a difference during this time between the Chiari patients without cough headaches and the healthy controls.

This supports the theory that a temporary worsening of the blockage of CSF contributes to the Chiari headache, but it is likely not the whole story. While most Chiari patients get these types of headaches in the back of the head, others feel it in the front. Similarly, it can be short lasting for some, but linger for others. And of course this says nothing about the extremely high rate of migraine type headaches that Chiari patients suffer from, but it is a step in the right direction.

Source: Transient Decrease in Cerebrospinal Fluid Motion Is Related to Cough-Associated Headache in Chiari I Malformation. Bhadelia RA, Ibrahimy A, Al Samman MM, Ebrahimzadeh SA, Zhao Y, Loth F.
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