## Cognitive Issues Can Linger After Surgery For Some Chiari Patients

A study from India found that almost a third of adult Chiari patients continue to suffer from cognitive dysfunction one year after decompression surgery. The research involved 23 Chiari patients seen over the course of three years.

All subjects were given a batter of cognitive tests both before and one year after surgery, in addition to quality-of-life measures and a special type of MRI, known as Diffusion Tensor Imaging (DTI). DTI can measure the fiber tract connections in the brain and previous research – from Conquer Chiari researchers – has shown damage to specific areas in Chiari patients using DTI technology.

Prior to surgery 65% of the Chiari subjects had a deficit in at least one cognitive area, with memory and visual motor processing being the most common. In addition, 52% (12) had a total cognitive score that indicated dysfunction, and one-third had a score that indicated severe dysfunction. Interestingly, 80% of the bony abnormality group showed a deficit in at least one cognitive area.

After surgery, although there was significant improvement in domain specific cognitive scores, 30% (7) of the Chiari subjects still scored in the dysfunction range overall. However, one could also say that nearly half of those with cognitive dysfunction (5 out of 12) improved after surgery to the point where they no longer were considered impaired. This puts the cognitive improvement rate in line with many other Chiari symptoms (other than cough/strain headaches), namely right around 50%.

In terms of imaging, prior to surgery the DTI scans showed damage to connections in the same regions as other studies have found and these improved significantly after surgery. Interestingly, there was no change to the imaging of the cerebellar tonsils, perhaps because the damage there was too severe to recover. However, improvements as measured by the DTI scans were not linked to improvements in the cognitive testing. There was a significant relationship though between improvements in cognitive function and improvements in the quality of life measures.

Unfortunately, the researchers did not factor pain levels into their analysis as previous research has shown that this is related to cognitive scores. It is also important to keep in mind that one year after surgery may not be a long enough period for full cognitive recovery. It could be that those still affected will keep improving over time.

Finally, this study was published in the premier neurosurgical journal, Neurosurgery. Hopefully, and thanks in large part to the trailblazing work of Conquer Chiari researchers, more clinicians will begin to accept the cognitive effects of Chiari at face value and incorporate them into their diagnostic evaluations.

**Source**: Moving Beyond Morphometrics and Alignment: Prospective Longitudinal Study on Cognition, Quality of Life, and Diffusion Metrics in Congenital Craniovertebral Junction Anomalies. Alle P, Thakar S, Aryan S. Neurosurgery. 2024 Jun 12. doi: 10.1227/neu.0000000000003030. Online ahead of print. PMID: 38864620

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*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.*