

Pediatric vs Adult Chiari

One of the long-standing questions surrounding Chiari is whether pediatric and adult Chiari are two aspects of the same condition or are they fundamentally different in some way. Now, a recent study from several neurosurgical groups in the Washington, DC area provides some interesting data in this regard.

The study compared a group of 153 surgical pediatric Chiari patients to 170 surgical adult Chiari patients, and looked at demographics, symptoms, imaging, and outcomes. The adult data came from 5 different surgical practices, while the pediatric data came from a single location with multiple surgeons.

Demographically, as has been shown before, there was a significant difference between the groups in terms of gender distribution. Among the adults, 86% were female compared to 58% in the pediatric group. The average age of diagnosis for the kids was around 9 years and for adults 36 years.

In terms of imaging, the amount of tonsillar herniation was similar between the two groups, but the rates of syringomyelia and scoliosis were markedly different. Among the adults, only 37% had a syrinx compared to 65% of the kids. For scoliosis, only 8% of adults had an MRI indication of abnormal spine curvature compared to 27% of the children.

There were significant differences in terms of symptoms as well. While 94% of the adult patients reported headaches, only 52% of the pediatric patients did. However, the rates of exertional, or Valsalva, headache were similar at 43% for the adults and 44% for the kids. A significantly higher percentage of adults also reported gait and extremity issues.

Previous research has shown that children tend to have better surgical outcomes than adults and the findings from this study support that. Specifically, 94% of the pediatric patients experienced symptom improvement or resolution compared to 75% of the adult patients. In addition, 10% of the adult patients reported worsening of their symptoms after surgery compared to only 1% of the pediatric group. Interestingly, there was not a significant difference in complication rates or additional surgeries between the groups.

Because the study was observational and descriptive in nature, strong conclusions can not be drawn as to whether pediatric and adult Chiari represent different points of the natural progression of a single condition, or if they are two fundamentally different conditions. While some of the differences are striking, it is interesting that the tonsillar position was not different between the groups. It is also important to note that this study was limited to surgical patients only, leading to the question of what could be learned by comparing children and adults with tonsillar herniation for whom surgery is not recommended.

Source: Multicenter comparison of Chiari malformation type I presentation in children versus adults. Mortazavi A, Almeida ND, Hofmann K, Davidson L, Rotter J, Phan TN, Tsering D, Maxwell C, Karunakaran J, Veznedaroglu E, Caputy AJ, Heiss JD, Sandhu FA, Myseros JS, Oluigbo C, Magge SN, Shields DC, Rosner MK, Chatain GP, Keating RF. J Neurosurg Pediatr. 2024 Feb 23:1-8. doi: 10.3171/2023.12.PEDS22366. Online ahead of print. PMID: 38394661

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