

Definitions

asymptomatic - having no symptoms

hemorrhage - bleeding

photophobia - sensitivity to light

subarachnoid space - space around the spine and brain which is filled with cerebrospinal fluid

Common Chiari Terms

cerebellar tonsils - portion of the cerebellum located at the bottom, so named because of their shape

cerebellum - part of the brain located at the bottom of the skull, near the opening to the spinal area; important for muscle control, movement, and balance

cerebrospinal fluid (CSF) - clear liquid in the brain and spinal cord, acts as a shock absorber

Chiari malformation I - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

decompression surgery - general term used for any of several surgical techniques employed to create more space around a Chiari malformation and to relieve compression

syringomyelia - condition where a fluid filled cyst forms in the spinal cord

Source

Source: [The type I Chiari malformation in a previously asymptomatic college athlete: addressing the issue of return to athletic participation.](#)
Harrell BR, Barootes BG.
Clin J Sport Med. 2010 May;20(3):215-7

When to Return to Sports

July 2010 - While the growing use of MRIs has for the most part been extremely beneficial in terms of identifying Chiari, it has also caused a new type of problem when Chiari is found in people incidentally. In this context, incidental means that while a person is found to have cerebellar tonsils that are herniated out of the skull, they do not have symptoms that can be clearly tied to Chiari, or even any symptoms at all. Cases such as these can be very confusing for patients and their families as they ponder whether they will ever become symptomatic and require surgery.

There has not been a lot of research in this area, but one study did find that the vast majority of people found to have Chiari did not develop symptoms over a several year period. Of course, this does not mean that symptoms wouldn't develop in 20 years, or after a car accident. The fact is, it is not well understood why some people with Chiari malformations are symptomatic and some aren't. In fact, it is not even clear if people with herniations but no symptoms should be referred to as having Chiari.

For parents of children in this situation, the issue becomes even more complex when sports are involved. For example, hypothetically, what would you do if your son or daughter was playing soccer and bumped heads with another player hard enough that they were both taken out of the game as a precaution. As a further precaution, your pediatrician orders a CT or MRI to make sure there is no internal bleeding. The scan does not find any bleeding, but does show a Chiari malformation. Now you are faced with the dilemma of having to decide if it is safe for your child to continue to play soccer or other sports. Are they at risk of developing Chiari symptoms if their is another collision? While neurosurgeons can certainly provide opinions and evaluate how much room there is around the herniated tonsils, there are no evidence based guidelines to help families decide.

In fact, this topic - and whether there should be restrictions on children after decompression surgery - generated a spirited debate at the last Conquer Chiari Research Conference. Some pediatric surgeons stated that after surgery they do not place any restrictions on their patients, while others insisted that contact sports should be avoided. Interestingly, in the 2010 NFL draft, a player was selected who had had Chiari surgery as a teenager. A case report published in the May issue of the Clinical Journal of Sports Medicine (Harrell, Barootes) highlights the difficulties that primary care physicians and sports medicine physicians have in deciding whether an athlete found to have Chiari incidentally should be allowed to return to play. Specifically, they report the case of a 19 year old male who was participating in spring football training at a university. The athlete began to experience frontal headaches that he rated as a 10 out of 10 on a pain scale. The headaches were also accompanied by light sensitivity and nausea. He had no history of any medical problems. The physicians ordered an MRI to rule out a tumor or hemorrhage and found a 8mm Chiari malformation with wedge shaped tonsils. However, they also found sinusitis.

They held the student out of practice, treated the sinusitis, and referred him to a neurosurgeon for evaluation. The neurosurgeon could not find any neurological problems or symptoms that related to the Chiari. Once the sinusitis was treated, the patient's headaches went away and he asked to return to football. The neurosurgeon cleared him to play because there was no indication of any blockage to the normal CSF flow. The athlete returned to practice without incident or further problems.

Based on their experience and a review of the literature, the authors highlight these points for primary care physicians to consider when confronted with the issue of a child found to have Chiari participating in contact sports:

- Do not allow participation in contact sports if Chiari 1 is confirmed and any of the following
 - presence of syringomyelia
 - obliteration of the subarachnoid space
 - evidence of indentation of the medulla (anterior)
 - symptoms that can be related to the Chiari malformation
- Neurosurgeon should be consulted before allowing return to sports
- Brain and entire spinal cord MRI should be performed
- If patient is cleared to play by a neurosurgeon, primary care physician should monitor for any clinical signs related to Chiari

The authors stress that these should not be considered guidelines as there is no research to back them up, but rather items for the treating physician to consider.

-- Rick Labuda

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