Key Points

1. What surgical technique is best, what symptoms will go away, and can symptoms come back are three common questions Chiari patients have
2. Long-term study looked at 96 Chiari patients with a focus on symptom recurrence and comparing surgical technique
3. Overall, 78% improved post-operatively
4. Headaches and drop attacks improved the most with 92% and 100% respectively either resolving or improving
5. Dysesthesia, arm pain and weakness were the worst with less than half improving
6. Overall, 10% of patients experienced symptom recurrence an average of 26 months after surgery
7. Recurrence rate for patients undergoing bone only decompression was 25% compared to 7.5% for patients whose dura was opened
8. Authors suggest using bone only decompression if headache is the only symptom

Definitions

ataxia - loss of muscle coordination, resulting in jerky movements

CSF flow - the natural movement of cerebrospinal fluid between the brain and spinal cord

cranial nerves - twelve pairs of nerves which originate in the brain

drop attack - a sudden fall due to vertigo or dizziness

dura - thick, outer covering of the brain and spinal cord

duraplasty - surgical technique where a patch is sewn into the

Chiari Symptoms Can Come Back Years After Surgery

March 31, 2008 -- Three of the most common questions Chiari patients have are: what surgical technique works best; what specific symptoms will go away with surgery; and will the symptoms ever come back? Now, a recent study out of the UK, which tracked 96 Chiari patients for several years, has provided some data to begin to answer those questions. The British researchers (Hayhurst et al) retrospectively looked at the clinical course of patients - for several years- treated between 1994 and 2005. They published their findings in the February, 2008 issue of the British Journal of Neurosurgery.

The patient group studied was comprised of 35 men and 61 women, with an average age of 33 (13 were children). Eighty-three had Chiari I, while13 suffered from Chiari II. Nearly half also had syringomyelia. Not surprisingly, the most common symptom was headache, with 63% of the group affected by them. Dysesthesia arm pain and weakness, ataxia, cranial nerve involvement, and drop attacks were also reported (Figure 1). Interestingly, for 13 patients headache was the only symptom.

The patients underwent a variety of surgical techniques, with 16 having only a bony decompression - meaning the dura is not opened - and the rest undergoing some type of intradural manipulation. After surgery, the patients were followed for an average of more than three and a half years.

Post-operatively, 78% of the patient group experienced either an improvement in, or complete resolution of, their symptoms, which is in-line with many other published outcome series. As to be expected, patients with Chiari only fared better than those with Chiari and syringomyelia. Specifically, 84% of the Chiari only patients improved with surgery, while only 74% of those with syringomyelia improved. Among the 46 patients in the syringomyelia group, follow-up MRIs showed that 19 syrinxes collapsed completely, 21 were reduced in size, and there was no change in 6.

At this point, the results from this study resemble many other published patient series; however, the British researchers also decided to look at which specific symptoms got better and which did not. For example, headaches resolved completely for 68% of the patients who had them and improved for another 24% (Figure 2). This means that 92% of the patients with headaches got some measure of relief from the surgery. Similarly, drop attacks, which affected seven people before surgery, completely resolved in all patients, for a 100% improvement rate.

Unfortunately, dysesthetic arm pain and weakness did not respond as well. Arm pain and weakness completely resolved for only 20% of the patients, and improved for an additional 23%. This means that for more than half, there was no change in these symptoms after surgery. This finding, in contrast with the headache and drop attack result, highlights the fact that some symptoms, especially those involving nerve damage, do not necessarily get better with surgery. In these cases, patients should not have unrealistic expectations of what surgery can do.

Next, the researchers leveraged their lengthy follow-up data to study the recurrence rate of symptoms. For years, Chiari & Syringomyelia News has heard anecdotal stories from people whose symptoms have returned after what was initially a successful surgery, however this phenomenon is usually not addressed or discussed in the medical literature. In some people, the return of symptoms is triggered by some type of trauma, such as a car accident. In others, however, there is no readily apparent reason why symptoms have come back.

The doctors found that over the course of several years slightly more than 10% of the patient group experienced recurrence of symptoms which were similar to what they felt before surgery (Figure 3). On average, the symptoms recurred 26 months after surgery, indicating that the traditional follow-up period of one year may be too short. About half of the patients whose symptoms came back ended up undergoing additional surgery. Interestingly, the recurrence rate among patients who had had a bone only decompression was much higher than for patients who had had their duras opened. Specifically, the recurrence rate for the bone only group was a staggering 25%, compared to 7.5% for the dura group. This led the authors to recommend that bone only decompression be reserved for adult patients whose only symptom is headache.

While this study suffers from some of the same limitations that most Chiari research does, such as the lack of a clear outcome definition, it does go into a level of detailed analysis that is encouraging. Many Chiari studies tend to lump patients together and not dig into the details. For this study, it would have been useful to see what characteristics, if any, differentiated the patients who experienced symptom recurrence from those who didn't. For example, it is known that some Chiari patients have small posterior fossas. It would have been interesting to see if there was a difference between those patients with a small posterior fossa and those without.

It is time for Chiari researchers to take their analyses to the next level and find ways to categorize and describe

dura in order to expand it

dysesthesia - an abnormal, unpleasant sensation; can be either spontaneous or evoked

recurrence - reappearance of symptoms after treatment

sepsis - very serious infection in the blood

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

Hayhurst C, Richards O, Zaki H, Findlay G, Pigott TJ. Hindbrain decompression for Chiari - syringomyelia complex: an outcome analysis comparing surgical techniques. Br J Neurosurg. 2008 Feb;22(1):86-91.

patients in a manner that will be both clinically useful, and hopefully provide clues to the underlying nature of the condition.

Figure 1
Presenting Symptoms (96 Patients)

Symptom	% With
Headache	63%
Dysesthesia/Pain	34%
Cranial Nerve Involvement	14%
Altered Sensation	14%
Ataxia	13%
Scoliosis	9%
Drop Attack	7%

Figure 2
Outcome By Symptom

Symptom	Res	Imp	No Ch	Worse
Headache	68%	24%	8%	0%
Dysesth.	20%	23%	53%	3%
Cranial Nerve	57%	14%	29%	0%
Ataxia	31%	62%	7%	0%
Drop Attack	100%	0%	0%	0%

Figure 3
Symptom Recurrence By Surgical Procedure

Procedure	LT Recurrence Rate
Bone Only	25%
Dura Open	7.5%
Overall	10.4%

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