

Key Points

1. Some research has indicated that duration of symptoms prior to surgery may be correlated with surgical outcome, but not all research has shown this
2. Study looked for predictors of outcome in 16 syringomyelia patients
3. Improvements in thermal sensory deficits were associated with duration of symptoms - the shorter the duration the better the outcome
4. Neuropathic pain also showed an association with duration of symptoms, but the sample size was small
5. Syrinx size, both before and after surgery, was not associated with outcome
6. Authors believe Chiari symptoms can be reversed and syringomyelia symptoms can be reversed if corrected after less than 2 years

Definitions

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

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

Chiari malformation (CM) - 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

dura - thick outer covering of the brain and spinal cord; beneath the dura are the arachnoid and the pia

duraplasty - surgical technique where a patch is sewn into the dura

dysesthesia - an unpleasant, or painful, response to a normal stimulus; for example pain from being touched lightly

laminectomy - surgical removal of

Duration Of Symptoms Before Surgery Influences Outcome

Over the years, evidence has been building that the length of time a CM/SM patient has symptoms - symptom duration - negatively impacts their chance for a successful outcome. This makes sense intuitively, the longer the disease has to progress, the greater chance of permanent nerve or structural damage; however, not every study has supported this theory.

Now, doctors from France have published a study which seems to support the idea that symptoms duration is associated with surgical outcome. Dr. Nadine Attal, a neurologist at the Centre d'Evaluation et de Traitement de la Douleur, and her colleagues looked for predictors of improvement in sensory deficits and pain in 16 patients with syringomyelia. They published their results in the July issue of the Journal of Neurology, Neurosurgery, and Psychiatry.

Specifically, the study looked at thermal deficits (inability to feel temperature), mechanical and vibration sensory deficits, and levels of neuropathic pain, both before and after surgery. The subjects (see Figure 1) included 12 men and 4 women and included both Chiari related syringomyelia and post-traumatic syringomyelia patients. As a group, the patients had endured their symptoms for an average of 5 years.

Each subject was examined prior to surgery and 6 and 24 months after surgery. Sensory deficits were quantitatively determined using thermal stimuli, pin pricks, cottons swabs, and vibration filaments. Pain was recorded using a standard patient-reported number scale. In addition to the neurological exams, each patient underwent an MRI (at the same time periods). All the Chiari patients were treated with decompression surgery, and the area around the syrinx in the post-traumatic patients was surgically decompressed as well.

The researchers found that before surgery, every patient exhibited some level of thermal and mechanical sensory deficits. Interestingly, the deficits were similar in the Chiari patients and the post-traumatic patients. Deficits in sensing vibration were more common in the Chiari group. Eight of the patients reported suffering from neuropathic pain, which was described as a burning or squeezing sensation.

For the group as a whole, the surgery did not really improve the thermal deficits; however, a subgroup of patients did recover some or all of their temperature sensation. The doctors looked for several possible predictors of this improvement and found that in patients who had had symptoms for 2 years or less, their thermal deficits tended to improve. In contrast, in patients with symptoms duration of longer than 2 years, the thermal deficits only stabilized or even got worse.

Similarly, the researchers found that among the neuropathic pain group, the pain improved by 70% or more for the three patients who had had symptoms for less than 2 years. However, the number of patients in this group - three - is too small to draw any definitive conclusions from this result. It should also be noted that pain associated with exertion - Valsalva maneuver - was significantly improved for the group as a whole.

In an indication of the limited value of MRI's, the study found that while the syrinx collapsed completely in 12 people, there was no association between whether the syrinx shrank and whether sensory deficits or pain improved. This finding supports several research reports which have demonstrated there is no link between the general size of a syrinx and either symptoms or surgical outcome. There is some evidence, however, that the shape of a syrinx may be more important than it's size.

The authors of this study believe their work shows that Chiari related symptoms are less time sensitive than syringomyelia related symptoms. Either way, given that most published literature shows an average symptoms duration of 5+ years for patients, earlier diagnosis and treatment of CM/SM should improve outcomes and should remain an important goal for patients, advocates, and the medical community.

Figure 1
Selected Characteristics of Study Patients

Sex	Age	Symptom Duration (months)	Syrinx Type	Syrinx
M	44	120	C	C2-T1
M	27	30	C	C1-T12
M	31	18	C	C2-T8
F	29	6	C	C3-T8

part (the bony arch) of one or more vertebrae

neuropathic pain - pain due to actual nerve damage; often described as burning in nature

syringomyelia (SM) - neurological condition where a fluid filled cyst forms in the spinal cord

thermal - related to temperature

Valsalva maneuver - straining, like when lifting something heavy

Source

Source: Attal N, Parker F, Tadie M, Aghakani N, Bouhassira D. Effects of surgery on the sensory deficits of syringomyelia and predictors of outcome: a long term prospective study. J Neurol Neurosurg Psychiatry. 2004 Jul;75(7):1025-30.

M	27	18	C	C1-T10
F	22	6	C	C4-T12
F	46	132	C	C7-T4
M	31	132	C	C2-T6
F	43	30	C	C2-T8
M	31	168	C	C1-T12
M	39	72	C	C1-T12
M	23	6	T	C1-T7
M	44	60	T	C1-T10
M	47	108	T	C1-T12
M	55	48	T	C1-L1
M	36	36	T	T4-L1

Syrinx Type: C = Chiari, T=Trauma

Syrinx: C# = Cervical Vertebra; T# = Thoracic Vertebra #, L# = Lumbar Vertebra #

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