Key Points

1. Certain types of anesthesia can aggravate Chiari symptoms, or make someone symptomatic.
2. If a Chiari patient has elevated ICP and the dura is punctured as part of the anesthesia, tonsillar herniation can become worse.
3. Neck position during general anesthesia can also aggravate - or spark - symptoms.
4. This can cause problems during labor because of the prevalence of epidurals, spinals, and general anesthesia.
5. Study reported no major problems with 12 Chiari moms - 30 births - during which 12 of the labors involved epidurals, spinals, or general anesthesia
6. Chiari patients who need anesthesia should discuss the issue at length with their doctors.

Definitions

analgesia - full or partial relief of pain

catheter - hollow, flexible tube used to deliver medicine into the body or drain fluids from the body

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

dura - thick outer layer covering the brain and spinal cord

epidural - space near the spinal cord just outside the dura

epidural block - procedure where anesthesia is injected into the epidural space - usually through a catheter

Chiari & Anesthesia Issues During Labor

A pregnant woman with Chiari has a lot to think about when planning labor (see also Case Studies), including concerns over pushing and the use of anesthesia. These days, anesthesia during labor is quite common, with many women opting for pain relief via an epidural. The high rate of C-Section deliveries in the US also leads to more frequent use of spinal blocks and general anesthesia during the labor and delivery process. While in general the risks of these types of anesthesia are low, the risks for a Chiari mom-to-be are significantly higher and potentially more serious.

There have been several reports of Chiari patients who experienced problems after receiving anesthesia in the spinal area - including severe headaches and worsening neurological symptoms. The risk is that many Chiari patients have an elevated ICP; the pressure inside their head is higher than normal. If, during an anesthetic procedure such as a spinal block or epidural, the dura is punctured, the pressure change in the spinal system can cause the cerebellar tonsils to descend further out of the skull causing more compression and blocking normal CSF flow.

With a spinal block, a needle is inserted through the dura to inject anesthesia directly into the CSF; so for a patient with Chiari, this can be a risky procedure. For an epidural, the anesthetic is injected just outside the dura, so the dura is not supposed to be punctured. However, sometimes the dura is punctured by accident - this is called a wet tap - which can lead to the same problems as a spinal block. There can be complications with general anesthesia as well. Routinely, to administer general anesthesia, the anesthesiologist will position the head back with the chin pointing up in the air. Unfortunately, this can elongate the tonsils and lead to symptom aggravation. In addition to the neck position aggravating symptoms, general anesthesia can also cause elevated intracranial pressure which can cause further herniation as mentioned previously.

While these risks are real, a recent study from the Mayo Clinic in Rochester, MN indicates the situation may be more manageable than it seems. Dr. Robert Chantigian, an anesthesiologist at the clinic, and colleagues reported in the Journal of Clinical Anesthesia (May 2002) on a series of Chiari patients who delivered babies at the Mayo Clinic over the past 50 years. Chantigian and his fellow researchers scoured medical databases to identify women who had delivered babies and were known to have Chiari either before delivery or were diagnosed at a later date. They identified 12 women who fit this criteria and delivered 30 babies between 1950 - 1999.

Of the 30 births, 9 involved the use of either a spinal block or epidural, and 3 involved the use of general anesthesia. Interestingly, in none of the cases did the women experience any onset or worsening of neurological symptoms associated with Chiari. One woman who received a continuous spinal during labor and subsequent C-section did develop what is known as a postdural puncture headache which went away after further treatment. Many of the deliveries which occurred prior to 1970 involved only the use of local anesthesia and some light, inhaled analgesia which should not have affected the Chiari moms any differently than healthy moms.

Clearly this is a small number of patients, and the study authors go to great lengths to say they are not stating that these types of anesthesia are risk-free for a Chiari mom. In addition, it is not clear how the researchers could have found a woman who delivered at their facility, but went somewhere else for treatment if she developed Chiari symptoms. Still, the report does show that in at least some cases, these types of anesthesia were safely and effectively used in Chiari patients.

In balancing their findings with the reports of others, Chantigian and his colleagues describe their current approach as involving extreme caution. They carefully screen a pregnant woman with Chiari for signs of elevated intracranial pressure and neurological symptoms and will avoid using a spinal block or epidural if there are signs of elevated ICP, preferring other types of regional blocks instead. In addition, they check how head position affects symptoms in case general anesthesia is required and try to avoid overextending the neck in any case.

Given the research reports to date, it would seem that the best path for a pregnant Chiari woman to follow is to carefully consult with their anesthesiologist before labor to review their history, symptoms, and options during labor and delivery.

ICP - intracranial pressure, pressure of CSF inside the skull area

IV - intravenous; method of delivering medicine into the body through a vein

parturient - related to giving birth

spinal block - procedure where anesthesia is injected - usually a single dose - into the CSF beneath the dura

wet tap - refers to when the needle used for an epidural block accidentally punctures the dura - can lead to headaches and other complications

Types of Anesthesia

Local- Temporarily stops pain in a small, specific part of the body. Usually given through a shot at the site.

Regional- Creates numbness in a larger area of the body.

Two types are:

Spinal- Anesthesia is injected into the CSF space of the spinal cord.

Epidural- Anesthesia is injected just outside the dura - often continuously through a catheter

General- Patient is unconscious; anesthesia delivered through a breathing mask or an IV.

The Anesthesiologist

Role: The anesthesiologist not only provides for the patient's comfort, but is responsible for monitoring and treating any problems with critical life functions - breathing, heart rate, blood pressure - during surgery.

Training: 4 years college, 4 years med school, 4 years anesthesiology residency.

Did you know: Some anesthesiologists are also pain management specialists. The American Board of Anesthesiology offers credentials in pain management.

Pre-surgical Consult: It is important to tell an anesthesiologist your complete medical history - especially CM/SM - before any type of anesthesia. Also include medicines being taken and herbal supplements - common herbal supplements can interact with many types of anesthesia.