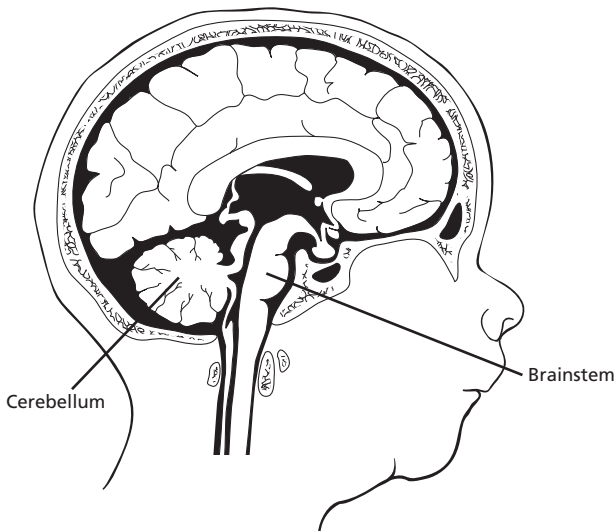
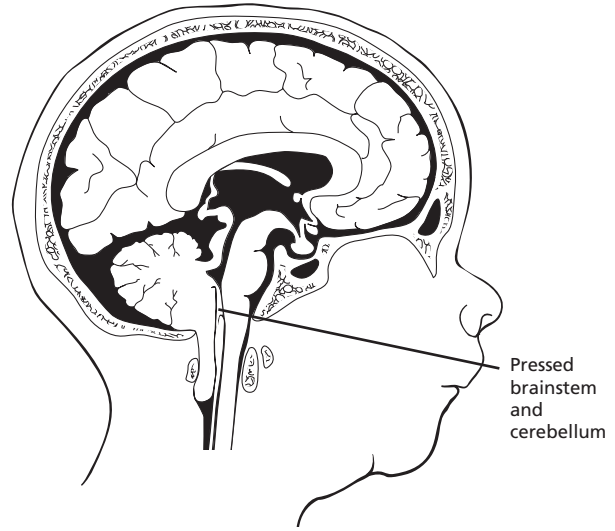


Let's Talk ABOUT...

Spina bifida and Chiari malformation



Normal Brain



Brain with Chiari malformation

What is Chiari malformation?

Chiari (kee-ARE-ee) malformation involves the part of the brain just above the spinal cord. This part of the brain is the brainstem and cerebellum. The brainstem controls the heart, lungs, and blood pressure. It also controls swallowing, vomiting, sneezing, and coughing. Many nerves start here that serve the head, eyes, and neck. The cerebellum controls balance. It helps your child develop good control of her head, neck, and trunk (see figures above).

In Chiari malformation, the brainstem is pushed down and pressed because there is less space. Normally, fluid flows around the brain. In Chiari malformation, the normal flow of fluid is blocked, backs up, and this increases pressure on the brain.

How do I know if my child has Chiari malformation?

If your child shows some or all of the following symptoms, have her checked for Chiari malformation:

- Difficulty breathing (respiratory distress)

- Not breathing (apnea)
- High-pitched noisy breathing (stridor)
- Poor swallow and weak suck, your baby has trouble feeding or can't handle fluids (spits and coughs and can't swallow properly)
- Weakness and numbness of the arms (tingly feeling)

The problems associated with Chiari malformation are different at different ages. For infants, the most common problems include poor feeding, not breathing, or arm weakness. Infants and up to about 10 years most commonly have stridor. Children who are older than 10 years usually have arm weakness, trouble breathing, and sometimes stridor. If you notice any of these problems, tell your child's doctor.

What tests should my child have?

The two most common tests used to diagnose Chiari malformation are a CT (computed tomography) scan and an MRI (magnetic resonance imaging). A CT scan is an X-ray that takes pictures of the brain and is used to monitor hydrocephalus or make sure

that a shunt is working. CT brain scans are used during the newborn period and can identify the Chiari malformation. The doctor may order this test when your child is a newborn.

An MRI is the best way to view a Chiari malformation. This test uses a powerful magnet and precisely programmed radio signals to “see” inside the body. Your neurosurgeon will determine when it is necessary to do this test.

What treatment will my child receive?

Fluid pressure that builds up around the Chiari malformation causes breathing problems and weakness. To help ease the pressure, your child’s surgeon may insert a shunt or replace an existing shunt. Your child may need additional surgeries.