

Chiari II Malformation



PLAY PICMONIC

Pathophysiology

Herniation of Cerebellum

Hermit-crab Silver Bell

Chiari II malformation is a downward displacement by more than five millimeters of the cerebellum (vermis and tonsils) and medulla through the foramen magnum. It occurs during fetal development. Chiari II malformation differs from Chiari I malformation, where displacement only involves the cerebellum tonsils. Two structures are involved in Chiari II and only one in Chiari I.

Herniation of Medulla

Hermit-crab Medusa

Chiari II malformation is a downward displacement of two structures. These structures are the cerebellum and medulla. Knowing these two structures will help in memorizing the characteristics of Chiari II malformation.

Through Foramen Magnum

Foreman Magnum

Chiari I malformation and Chiari II malformation together pass through the foramen magnum.

Noncommunicating Hydrocephalus

Nun-communicating Hydras-in-head

Association

Aqueductal Stenosis

Aqueducts Stone

Aqueductal stenosis is a narrowing of the cerebral aqueduct, which can occur due to external compression of the mesencephalon. It's been associated with Chiari II malformation. It blocks the cerebrospinal fluid (CSF) in the ventricular system, resulting in obstructive hydrocephalus.

Myelomeningocele

Blood-cells Men-in-seal

Lumbosacral myelomeningocele is seen in 60-95% of cases of Chiari II malformation. Myelomeningocele occurs when the part of the spinal cord and meninges develop outside the body instead of inside.

Diagnosis



MRI

M-R-eyes Machine

An MRI is used to diagnose patients with Chiari II malformation. It can show the downward displacement of the cerebellum and medulla. Other findings can also be seen in some cases, such as myelomeningocele, beaked tectal plate, and small posterior fossa.

Treatment

Surgery

Surgeon

Surgery aims to relieve symptoms, optimize nerve tissue decompression, reduce disease progression, and reconstruct normal cerebrospinal flow around the cerebellum. The primary surgery to treat Chiari malformation is called decompression surgery.

Supportive Therapy

Supportive IV Bags

Supportive therapy may include the concern of neurogenic bowel, special feedings for neonatal feeding difficulties, and breathing support for apnea and respiratory failure.