Spina Bifida Assessment

Spina bifida is a neural tube defect involving the spinal cord and bones of the spine. The condition is caused by a congential malformation of vertebrae and occurs in various forms of severity. Types of spina bifida include spina bifida occulta, meningocele, and myelomeningocele. Identifying the type of spina bifida is critical for determining a treatment plan. Symptoms include the presence of dimpling at the base of the spine, lumbar sac, or hydrocephalus. The patient with spina bifida may also experience neurologic defects such as paralysis. Refer to the Picmonic on "Spina Bifida Interventions" for further information.

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Cause

Congenital Malformation of Vertebrae
Present-from-birth Vertebrae Malformed
Spina bifida is a congenital malformation of the vertebrae caused by a combination of genetic and environmental risk factors such as folate deficiency. The neonate's brain and spinal cord develop from the neural tube, which is an embryonic structure that normally fully develops by the 4th week after conception. Spina bifida is caused by the failure of neural tube closure during the 3rd-4th week of gestation. Since the neural tube fails to close properly, defects involving the spinal cord and bones of the spine occur.

Assessment

Dimple With or Without Hair Tuft
Dimple With Hair and Dimple Without Hair
The outer part of a portion of vertebrae in infants with spina bifida occulta is not completely closed. The area of the lesion may appear normal or present with a small dimple with or without an abnormal tuft of hair at the base of the spine. This often occurs in the lumbosacral area (L5 and S1).

Lumbar Sac
Lumber Sack
A lumbar sac is present in patients with meningocele and myelomeningocele. The infant with meningocele has a fully developed spinal cord with the protective membranes (meninges) of the spinal cord pushing through the vertebrae into a sac-like protrusion that contains cerebrospinal fluid. Although the protrusion on the back of the infant with myelomeningocele is sometimes covered by skin, usually the sac contains the spinal cord, meninges, nerve roots, and cerebrospinal fluid that greatly increases the risk of infection.

Hydrocephalus
Hydras-in-head
Hydrocephalus is common in babies born with myelomeningocele. The accumulation of fluid in the brain requires a ventricular shunt to drain excess fluid into the peritoneum to prevent increased intracranial pressure. The tube may be surgically placed immediately after birth, during surgery to close the sac, or as fluid accumulation becomes problematic.

Paralysis
Wheelchair
The abnormal development of the neural tube in individuals with spina bifida may lead to neurological deficits, such as muscle weakness or paralysis. Paralysis in the legs may be partial or complete. Crutches, braces, or wheelchairs may be used to help with mobility. Other neurological deficits include learning disabilities, difficulty paying attention, and issues with reading comprehension.

Considerations

Identify Type

Magnifying-glass Typewriter

Spina bifida occulta is the mildest form and involves a small gap between two or more vertebrae of the spine. The separation of the vertebrae is so small that the spinal cord does not protrude. Meningocele, a rare form of spina bifida, is characterized by a sac containing the meninges and cerebrospinal fluid. The spinal cord remains in the spinal canal. Meningocele may be removed with surgery with minimal nerve damage. Myelomeningocele, the most severe form of spina bifida, manifests with a sac on the infant's back containing spinal cord, meninges, nerve roots, and cerebrospinal fluid.