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Journal of Family Medicine & Medical Science Research

Commentary

Significance of Spina Bifida and Its Types

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ABOUT THE STUDY

Spina bifida (Latin for "split spine"; SB) is a birth condition in which the membranes surrounding the spinal cord and the spine do not completely close during early pregnancy development. Spina bifida occulta, meningocele, and myelomeningocele are the three primary kinds. Spina bifida cystica includes meningocele and myelomeningocele. Though it is rarely found in the middle back or neck, the lower back is where it most frequently occurs.

The symptoms of Occulta are absent or moderate, and may include a hairy patch, a dimple, a dark area, or swelling on the back around the location of the spine's gap. A bag of fluid is frequently present at the gap in the spine, and meningocele usually causes only minor complications. The most severe kind is myelomeningocele, often known as open spina bifida. This variety is characterized by difficulties walking, decreased bladder or bowel control, fluid buildup in the brain (hydrocephalus), a tethered spinal cord, and a latex allergy. Learning difficulties are not very prevalent.

It is thought that a mix of hereditary and environmental factors contribute to spina bifida. There is a 4% probability that the subsequent child will likewise be impacted if there has already been one affected child or if one of the parents is already afflicted. Another important factor is a diet low in folate (vitamin B9) both before and during pregnancy. Some anti-seizure drugs, obesity, and poorly managed diabetes are additional risk factors. A diagnosis could be made before or after a baby is born. Spina bifida risk increases before birth if an amniocentesis or blood test reveals a high amount of alpha-fetoprotein (AFP). An ultrasound examination might also find the issue. After birth, medical imaging can confirm the diagnosis. While similar to other neural tube defects including anencephaly and encephalocele, such as spina bifida is not one of them.

If the mother consumes adequate folate before and during pregnancy, the majority of occurrences of spina bifida can be avoided. Folic acid has been demonstrated to be effective for the majority of women when added to flour. Before or after delivery, open spina bifida can be surgically closed. Hydrocephalus sufferers may require a shunt, and a tethered spinal cord may need to be surgically corrected. Wheelchairs and crutches are examples of mobility aids that may be helpful. The use of a urinary catheter may also be necessary.

Other kinds of spina bifida occur at rates ranging from 0.1 to 5 per 1,000 live births, greatly varying by nation. In wealthy nations like the United States, it happens in roughly 0.4 out of every 1,000 births. It affects roughly 1.9 out of every 1,000 babies in India. Africans are less at risk than are Europeans.

Types

Spina bifida occulta: Latin's occulta means "hidden" The mildest type of spina bifida is this one. Some of the vertebrae in occulta have some of their exterior portions open. The spinal cord does not emerge because the vertebral breaks are so small. The skin at the lesion's location could be normal, it could have hair sprouting from it, it could have a dimple, or it could have a birthmark. Spina bifida occulta is not related with elevated AFP, a standard screening method for identifying neural tube defects in pregnancy, unlike the majority of other kinds of neural tube defects. This is so that the dural lining is preserved, unlike in the majority of other neural tube abnormalities. Since the ailment is typically asymptomatic, many individuals with this kind of spina bifida are unaware that they even have it. Spina bifida occulta and back pain have not been linked in radiographic research investigations, according to a systematic assessment of those studies. The adverse findings are supported by more recent research that was not examined in the review. However, additional research indicates that spina bifida occulta may not necessarily be benign. According to one study, the intensity of back discomfort among patients with spina bifida occulta is severe. Spina bifida is not a real spina bifida, and incomplete posterior fusion is very seldom neurologically significant.

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Received: 11-Aug-2022, Manuscript No. FMMSR-22-19485; **Editor assigned:** 16-Aug-2022, PreQC No. FMMSR-22-19485 (PQ); **Reviewed:** 30-Aug-2022, QC No. FMMSR-22-19485; **Revised:** 06-Sep-2022, Manuscript No. FMMSR-22-19485 (R); **Published:** 12-Sep-2022, DOI: 10.37532/2327-4972.22.11.129

Citation: Zhao Y (2022) Significance of Spina Bifida and Its Types. J Fam Med Med Sci Res.11:129

Myelomeningocele: The spina bifida condition known as myelomeningocele, sometimes known as meningomyelocele, affects the meninges and nerves and frequently leads to the most serious problems. The unfused part of the spinal column permits the spinal cord to protrude through an aperture in people with myelomeningocele. The third week of embryonic development, during neural tube hole closure, is when myelomeningocele develops. MMC is a complete failure of this to take place. Meninges, cerebrospinal fluid, a portion of the spinal cord, and nerve roots are all contained in a sac formed by the protruding meningeal membranes that cover the spinal cord. Arnold-Chiari malformation is also linked to myelomeningocele, necessitating the installation of a VP shunt. Carbamazepine, cytochalasins, hyperthermia, valproic acid, and calcium-channel blockers are some of the toxins and medical disorders linked to MMC production.

Myelocele: The most serious type of myelomeningocele is spina bifida with myelocele. In this form, the affected region is represented by a mass of flattened nerve tissue that resembles a plate, with no overlaying membrane. The newborn is more vulnerable to diseases that can be fatal, such meningitis, because these nerves and tissues are exposed. The spinal cord's projecting part and the nerves that emerge from that level of the cord are both injured or underdeveloped. As a result, below the level of the spinal cord damage, there is typically some paralysis and loss of sensation. Therefore, the severity of the accompanying nerve dysfunction and subsequent paralysis may increase with increasing cranial level of the defect. Walking issues, sensory loss, hip, knee, or foot abnormalities, as well as loss of muscle tone, are possible symptoms.