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Spina Bifida

Overview:

- Spina bifida is a birth defect that falls under the category of neural tube defects. This defect can occur anywhere on the spine.
- Spina bifida can range from mild to severe, and it may lead to minor physical disabilities or non at all.
- The exact cause of spina bifida is still unknown, but it could be attributed to a combination of genetic and environmental factors.
- Signs and symptoms of spina bifida vary by type and severity, and they can be different for each person.
- Taking enough folic acid supplements before and during pregnancy is the best way to prevent spina bifida.

Definition:

Spina bifida is a birth defect that falls under the category of neural tube defects. The neural tube is the embryonic structure that eventually develops into the baby's brain and spinal cord and the tissues that enclose them. This defect can occur anywhere on the spine and it may result in cognitive and physical disabilities. Spina bifida can range from mild to severe, depending on:

1. The size and location of the neural tube defect.
2. Whether skin covers the affected area.
3. Which spinal nerves come out of the affected area of the spinal cord.

Types of spina bifida:

- **Spina bifida occulta: ("Occulta" means hidden)**

It is the mildest form of spina bifida, and it results in a small gap in one or more of the spine vertebrae. In this form of spina bifida there is no opening or sac on the infant’s back and the spinal nerves are usually normal. Because the spinal nerves usually aren't involved, infants with spina bifida

occulta don’t show any signs or symptoms that indicate any neurological problems. Many people who have spina bifida occulta don't even know it, unless the condition is discovered during an imaging test done for unrelated reasons. This condition doesn’t typically cause any disabilities.

- **Meningocele:**

A rare form of spina bifida, where there is a sac protruding from the infant’s back through an opening in the vertebrae. The sac is filled with fluid, but it doesn't contain the spinal cord, so nerve damage is less likely. This condition may result in minor disabilities.

- **Myelomeningocele:**

Myelomeningocele is the most severe form of spina bifida in which the spine and spinal canal do not close before birth and the spinal canal is open along several back vertebrae. The membranes and spinal nerves push through this opening at birth, forming a sac on the baby's back, typically exposing tissues and nerves. This makes the baby prone to life-threatening infections. In certain cases, the sac may be covered by skin. This form of spina bifida results in moderate to severe disabilities (such as: loss of sensation in the legs or feet).

CauseS:

Normally, the neural tube forms early in pregnancy, and it closes by the fourth week of pregnancy. In babies with spina bifida, a portion of the neural tube fails to develop or close properly, causing defects in the spinal cord and in the bones of the spine. The exact cause of this condition is not yet known, but as with many other health issues, it may be attributed to genetic and environmental factors.

Risk factors:

Although doctors and researchers don't know for sure why spina bifida occurs, they have identified some risk factors:

1. Family history.
2. Gender: Spina bifida is more common among females.
3. Having neural tube defects.
4. Folic acid deficiency during pregnancy.
5. Taking certain medications during pregnancy (such as: anti-seizure medications).
6. Females who are obese.
7. Females with diabetes.
8. Exposure to radiation.
9. Increased body temperature in the early weeks of pregnancy due to the use of saunas.

Symptoms:

Signs and symptoms of spina bifida vary by type and severity.

Spina bifida occulta: Typically there are no signs or symptoms, but visible indications can sometimes be seen on the newborn's skin above the spinal defect, including:

1. An abnormal tuft of hair, or a small dimple on the infant’s back.
2. A small birthmark.

Myelomeningocele symptoms:

1. The spinal canal remains open along several back vertebrae.
2. The spinal cord or nerves protrude forming a sac.

When to see a doctor:

Typically, spina bifida is diagnosed before or right after birth, and these patients should receive regular medical care throughout their lives.

Complications:

- Bowel and bladder problems.
- Urinary tract infections.
- Total or partial paralysis of the legs.
- Orthopedic complications (foot deformities, and asymmetric hips).
- Scoliosis (a sideways curvature of the spine).
- Hydrocephalus (accumulation of fluid in the brain).
- Meningitis (infection in the tissues surrounding the brain).
- Learning difficulties, and speech disorders.
- Dairy allergy or latex allergy.
- Depression.

Diagnosis:

In certain cases, the condition is not detected until after the infant is born. However, most cases of spina bifida are diagnosed before birth with the help of the following diagnostic measures:

- Laboratory tests: Maternal serum alpha-fetoprotein (MSAFP) test. For the MSAFP test, a sample of the mother's blood is drawn and tested for alpha-fetoprotein (AFP), which is a protein produced by the fetus. This test measures the amount of AFP that crossed the placenta and entered the mother's bloodstream. Abnormally high levels of AFP suggest that the baby has a neural tube defect, such as spina bifida.
- Amniocentesis: For this test a small sample of the amniotic fluid surrounding the fetus is taken. Higher than average levels of AFP in the fluid may indicate spina bifida.
- Ultrasound: Ultrasounds are routinely performed between 16-18 weeks of pregnancy.
- Additional tests: An ultrasound scan of the kidneys and bladder.

Treatment:

Neurological damage is often irreversible, which means that spina bifida treatment is mostly aimed at preventing complications. Treatment options depend on the severity of the condition, for instance, spina bifida occulta often doesn't require treatment at all, but other types of spina bifida do. This includes:

- **Surgery:** Treating meningocele requires surgical intervention to put the protective membranes around the spinal cord (meninges) back in place and close the opening in the vertebrae. Myelomeningocele also requires surgery. Performing the surgery early (24 to 48 hours after birth) can help minimize risk of infection that's associated with the exposed nerves and may also help protect the spinal cord from more trauma. Sometimes a shunt to control hydrocephalus in the baby's brain is placed during the operation on the spinal cord.

- **Rehabilitative therapy:** This includes physiotherapy, occupational therapy and speech therapy, and this may require assistive equipment (such as: walking aids and wheelchairs).
- Treatment for bladder and bowel problems typically begins soon after birth.

Prevention:

- Folic acid supplements must be taken starting at least one month before conception and continuing through the first trimester of pregnancy. Sometimes, higher doses of folic acid may be needed; such as in the following cases:

1. If any of the risk factors are present.
2. If you have spina bifida or if you've given birth to a child with spina bifida.

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3. If you're taking anti-seizure medications.
4. If you have diabetes.
5. It’s also important to check with your doctor before taking dietary supplements with high doses of folic acid.

Frequently Asked Questions:

- **Do spina bifida patients face learning difficulties?**

  Most children with spina bifida have normal mental abilities, but they may require some intervention to overcome learning difficulties.

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