

SPINA BIFIDA / NEURAL TUBE DEFECT (NTD)

Note: spina bifida cannot be corrected as the nerve tissues cannot be reproduced or replaced once formed. But it can be prevented by Dietary management before conception and during pregnancy.

The term Spina bifida implies a failure of the fetus's spine to close properly during the early development of the embryo (first month of pregnancy).

TYPES

1. There are three types of spina bifida:
2. Spina bifida occulta: It is a bony defect in which there is failure of fusion of the vertebral arches posteriorly. It is the mildest form and is common in the lumbo-sacral region.
 - Overlaying skin may have a dimple, a tuft of hair, a lipomatous mass or a dermal sinus.
 - When there is neurological deficit there is always an overlying skin defect.
3. Meningocele: It is more severe form of spina bifida. In this spinal cord develops normally but the meninges (the protective covering around the spinal cord) protrude from the opening in the spinal column. The sac containing this protruded part of the spinal cord is termed meningocele.
4. Myelomeningocele / spina bifida aperta: It is the severest form of spina bifida, mostly found in the thoraco-lumbar region. The meninges and the spinal cord containing the deeper nerves of the spinal column protrude from the opening in the spine.
 - The bulging sac may contain only the meninges and fluid only and the nerves are in place.
 - Cerebrospinal may be leaking through the site.
 - The spinal cord and the nerve roots are enclosed in a sac and are outside the line of the vertebra.
 - The lesion may be closed or open.

CAUSES

1. Congenital defect.
2. Abnormally high levels of Alpha-Fetoprotein (AFP) in the amniotic fluid that surrounds the embryo.
3. Folic acid deficiency during pregnancy.
4. Vitamin B12 deficiency
5. Highhomocysteine levels.
6. Family history of neural tube defect.
7. A women who has given birth to an NTD baby before are at more risk to have another NTD baby.
8. Pregnant women with diabetes.
9. Hyperinsulinemia.
10. Pregnant women taking certain seizure medications.
11. Prepregnancy obesity.

MANAGEMENT

1. Child born with NTD:
 - a. Consult your physician immediately.
 - b. Seek advice of a neurosurgeon.
 - c. Take aid of physiotherapy helps in faster rehabilitation.
 - d. Avoid exposure to latex and latex containing products.

DIETARY MANAGEMENT

2. Eat a well balanced diet; to give birth to a healthy baby, it is essential that you are healthy too.
3. Consume enough folic acid, folate (vitamin B9). Researches have shown that folic acid deficiency during pregnancy is strongly associated with NTD.
4. Folic acid is essential for the development of DNA, hence is important for cell growth and development, and tissue formation. Hence it is essential for proper growth and development of the fetus.
5. Since spina bifida occurs in first month of pregnancy, it is essential that the pregnant women should have Significant amount of folic acid in her body before conception.
6. As most of the pregnancies are not planned it is essential for all women of childbearing age to have at least 400 µgm of folic acid daily.
7. Consume 600 µgm of folic acid daily if you are pregnant and 500 µgm of folic acid daily if you are breast feeding.
8. In case you had a previous NTD baby, it is advised to undergo at least 4.0 mg folic acid supplementation daily.
9. Foods that are naturally high in folic acid include dark green vegetables such as broccoli and spinach, egg yolks and citrus fruits.
10. If you cannot obtain enough folic acid from diet you can take folic acid supplements.
11. Increase intake of foods rich in Methionine, essential amino acid it helps to prevent NTD.
12. Increase the dietary intake of choline and inositol, reduces the risk of NTDs. Increase the intake of choline and inositol in the periconceptional period.
13. Consume at least 425 mg/day before conception, rather every women in their reproductive age should consume this amount of choline, and 550 mg/day for the lactating females.
14. Vitamin B12 consumed in early months of pregnancy, reduces the risk of NTDs.
15. Consume at least, 2 µg/day for women in their fertile period and 3 µg/day for lactating women.
16. Limit intake of sucrose (table sugar) and foods with high glycemic index (mostly simple carbohydrates); they increase the risk of NTDs. In a research done it was proved that high intakes of glucose and fructose did not risk the fetus, but sucrose and foods with high glycemic index were a risk factor for NTDs.

NOTE : PLEASE CONTACT WITH YOUR DOCTOR FOR EXACT DIET FOR THE HEALTH PRBLEMS YOU HAVE.THIS A SAMPLE DIET CHART TO GET THE IDEA OF YOUR DAILY ROUTINE FOOD INTAKE TO MAKE YOUR LIFE HEALTHY .