Spina bifida

Symptoms or Behaviors

Spina bifida develops during the first month after conception – usually before a woman even knows she is pregnant. Although scientists have not identified the precise cause of this birth defect, they believe it results from a combination of environmental and genetic factors.

Approximately 40% of all Americans may have spina bifida occulta, but because they experience little or no symptoms, very few of them ever know that they have it. The other two types of spina bifida, meningocele and myelomeningocele, are known collectively as "spina bifida manifesta", and occur in approximately one out of every thousand births. Of these infants born with "spina bifida manifesta", about 4% have the meningocele form, while about 96% have myelomeningocele form. It is the second most common birth defect.

About the Disorder

Spina bifida develops during the time when the neural plate, a sheet of cells along the back of the fetus, forms the neural tube. In fetuses with spina bifida, parts of the neural plate fail to form a tube. Spina bifida occulta usually has no obvious symptoms and may be noticed on routine x-rays. A defect in one or more of the vertebrae is present but there is no damage to the spinal cord. The skin over the defect may be dimpled or pigmented or may have hairy patches. Meningocele is when the meninges protrude through the bony defect producing a sac filled with cerebrospinal fluid. Myelomeningoocele refers to the most severe form when the spinal cord, nerve roots, or both protrude into the sac. Neurological deficits are usually present causing paralysis of muscles in the legs and lower trunk area. Skin sensations may be impaired or absent and bladder and bowel incontinence may be present.

The effects of myelomeningocele, the most serious form of spina bifida, may include muscle weakness or paralysis below the area of the spine where the incomplete closure (or cleft) occurs, loss of sensation (pain, temperature, pressure) below the cleft, and loss of bowel and bladder control. In addition, fluid may build up and cause an accumulation of fluid in the brain (a condition known as hydrocephalus). A large percentage (70%-90%) of children born with myelomeningocele have hydrocephalus. Hydrocephalus is controlled by a surgical procedure called "shunting", which relieves the fluid buildup in the brain. If a drain (shunt) is not implanted, the pressure buildup can cause brain damage, seizures, or blindness. Hydrocephalus may occur without spina bifida, but the two conditions often occur together.

The types and severity of a patient's symptoms are determined by the particular spinal nerves involved. All nerves below the defect usually are affected. Therefore, the higher the spina bifida occurs on the back, the greater the amount of nerve damage and loss of muscle function and sensation. If a child's upper thoracic cord and nerves are affected, for example, the lower limbs may be totally paralyzed and normal walking will be impossible. But a child with a lesion at the low sacral nerve level will have relatively mild paralysis and bladder and bowel problems.

Minnesota Low Incidence Projects

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Educational Considerations

•Visual perception problems which may cause difficulty with spatial discrimination, figure ground perception, and eye tracking
•Language difficulties in reasoning and comprehension, auditory decoding, and auditory association
•Inappropriate and bizarre language usage
•Reading problems in comprehension and content
•Math difficulty, especially affecting math reasoning skills
•Distractibility and inattentiveness
•Organizational problems
•Students with spina bifida may have abstract thinking difficulties. They need concrete beginnings/endings, need to experience materials, and to be an active participant
•Allow extra time to process questions and come up with answers
•Organizational skills and auditory/visual processing should be monitored
•Poor handwriting skills; may need written work modifications/accommodations and may need handwriting alternatives
•Sensory integration problems including late or non-established dominance, hand weakness, poor motor control, problems crossing midline, poor kinesthetic and tactile feedback, tactile defensiveness, and postural insecurity
•May need support to develop independent self-care skills and a consistent bowel/bladder management plan (this may include catheterization performed by school personnel and/or student)
•Will need frequent change in positions to avoid development of pressure sores
•School staff should recognize and accommodate the need for frequent absences due to medical appointments, procedures, and surgeries
•School personnel should be aware of the necessary medications and their side effects
•School staff should be aware of the signs of shunt malfunction/infection
•Speech Language Clinician may be involved to help with language development
Often need involvement from OT/PT/DAPE staff

Resources

National Information Center for Children and Youth with Disabilities Fact Sheet Number 12, 1994

Spina Bifida, Hope Through Research, National Institute of Neurological and Communicative Disorders and Stroke, NIH Publication No. 86-309, January 1986

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