

Riding With Spina Bifida

Medical Considerations for Therapeutic Riding

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Spina bifida is a descriptive diagnosis that also goes by the names myelomeningocele, spina bifida cystica, and myelodysplasia. It is diagnosed at birth by the presence of an external sac on the child's back along the spine. This sac contains the spinal cord and the meninges, the protective layers of tissue that enclose the spinal cord. Surgery is usually performed within days after birth to close the causative defect in the vertebrae so that the myelomeningocele (and the spinal cord) is no longer exposed, and less likely to be injured.

The result of the myelomeningocele and the surgery is essentially a spinal cord injury. There is some amount of paralysis and sensory loss below the level of the sac. There is also usually some degree of hydrocephalus, an increase of fluid in the brain. The hydrocephalus is treated with a shunt, which is a tube surgically implanted from the brain to the abdomen to help regulate the amount of fluid. As with all spinal cord injuries, the exact impairment is unique to each individual person. However, spina bifida is usually also accompanied by other malformations of the brain and spinal cord. These include Chiari II malformation, hydromyelia and tethered cord. These associated conditions may become symptomatic, particularly during the child's growth.

Spina bifida is usually both an indication and a precaution to horseback riding. It is an indication because some of the physical and developmental problems associated with it are very likely to improve through therapeutic riding. For example, a child or adult with spina bifida may have decreased independent sitting balance; a well-planned therapeutic riding program can fine-tune the sitting balance so that off-the-horse functional daily living activities, such as sitting or walking, also improve. However, spina bifida is a precaution to riding because that same impaired sitting balance makes a fall more likely. Additionally, the rider is likely to have decreased sensation in the legs and seat area, making pressure sores and skin irritation a possibility. Thus, if the word "precaution" implies the need for further investigation prior to riding, taking a rider with spina bifida means the operating center will need to obtain an updated medical history and further evaluate that rider in order to plan a safe and effective program.

The rider with spina bifida should provide the center with information such as the spinal cord level of the defect, any associated known medical problems, and the presence of a shunt, scoliosis, hydromyelia, Chiari II malformation, and tethered cord. The center should obtain a therapist's report which reviews the rider's range of motion, functional abilities such as walking, transfers, ability to and manner of propelling the w/c, sitting and standing balance, arm and hand control, as well as sensation and history of skin breakdown in the affected areas. There is usually normal cognition. Preferably, the center's therapist should evaluate the rider and plan the program with the therapeutic riding instructor.

It may be very appropriate for the child with spina bifida to ride with a physical or occupational therapist in a treatment situation such as hippotherapy, or in a class with the therapist providing hands-on therapeutic input. Children with spina bifida often have aspects of delayed development -- for example impaired processing of sensations such as their position in space -- simply due to the fact that they are physically disabled. The child may have impaired movement and body position sense simply because he did not move as much as a normal child and was physically touched and moved less by parents and caretakers. Therefore, the riding program may need to be more focused initially on the developmental level and less on learning riding skills.

When a child with spina bifida rides, the center and the instructor should be familiar with the symptoms of tethered cord, Chiari II and hydromyelia. Tethered cord occurs when the surgically repaired myelomeningocele becomes bound down or anchored due to the formation of scar tissue after surgery. Normally, as the rider's spine moves in response to the horse's movement, and as the child grows, the spinal cord moves freely in the spinal canal. It is encased but not restricted by the vertebrae of the spine. When tethered cord occurs, the rider's spinal cord is anchored in the area of the repaired myelomeningocele and cannot move freely in the spinal canal. Certain symptoms can be observed when tethered cord is present, and the center staff should take note of them, as follows:

- worsening gait
- rapidly increasing scoliosis
- increasing incontinence
- back or leg pain
- spasticity (newly appeared or worsening)

If these symptoms appear the center should report them to the child's parent or caretaker and the physician. The riding program may be the most consistent source of therapy the child has, so the center's role in noting and reporting the symptoms of tethered cord is important. It is most likely to observe such symptoms in a growing child, and particularly one who is more functional, with a lower level spinal defect and the ability to walk.

Also associated with spina bifida is Chiari II malformation. It is a congenital, structural set of abnormalities of the lower brain that result in compression of the brain stem and obstruction of the natural flow of cerebrospinal fluid (the fluid that encases and protects the brain and spinal cord). Although most children with spina bifida appear to have this brain abnormality, it only causes symptoms in 20-30%. However, the symptoms can be very problematic because the brain stem coordinates very basic activities, such as breathing.

Again, the riding program may be the most consistent form of therapy the child receives, so the center may note the development of the following symptoms:

- Respiratory distress (noisy congestion or difficulty breathing, retraction of the chest during the inhale instead of expansion)
- Apnea (breathing stops)
- Stridor -- a harsh croupy noise while breathing, or cyanosis, a bluish tint to the fingernails and mouth due to lack of oxygen
- Increased difficulty swallowing, increased drooling, gagging or vomiting
- New backward spastic arching of the head, neck or entire body
- Increased weakness/spasticity of the arms
- Persistent severe headaches, radiating from the base of the skull and neck

Lastly, the person with spina bifida may also have hydromyelia, an abnormally increased amount of cerebrospinal fluid in the spinal cord. It causes increased muscle weakness and pressure on the spinal nerves. This allows the development of a scoliosis. Hydromyelia is relieved by repair of the shunt, the implantation of a shunt in the spinal cord, or surgical drainage of the fluid. The center should watch for and report symptoms including:

- Progressive loss of muscle strength
- Rapidly increasing scoliosis

The above conditions associated with spina bifida should not be taken lightly. As operating centers increase in number and clientele, it is likely that a center will encounter a child with such

symptoms. As centers serve more socially and economically disadvantaged people, particularly children, it is possible that the center's instructors and therapists may be the first to notice persistent symptoms. The instructor and therapist should ask whether the child with spina bifida has been assessed for the presence of symptomatic tethered cord, Chiari II and hydromyelia. If the parent or caretaker appears unaware that such conditions can exist, the center may even need to familiarize them with the symptoms and encourage them to ask the child's neurologist and physician about the conditions. Thus, the precautionary aspect of spina bifida is that, while the condition is technically non-progressive in nature, there are associated problems that can be very progressive and even life-threatening.

In the past, riders with spina bifida have been considered to be the least problematic, most capable and most likely to benefit from horseback riding. Although the center's instructors and therapists need to closely monitor the rider for the problems discussed above, therapeutic riding continues to be in most instances a very healthy, beneficial and therapeutic activity for all people with spina bifida. Many such people can progress to high levels of independence in their riding skills and go on to competition. Therapeutic riding can be an excellent lifelong way for the person with spina bifida to maintain or improve functional life skills, fitness and strength, while providing a rewarding experience for the rider and the entire therapeutic riding team.