

## Strabismus in Spina Bifida Myelomeningocele



Rudolph S. Wagner, MD

It is well established that children with spina bifida myelomeningocele have a high prevalence of strabismus. Some have related this to the fact that approximately 80% of these patients have hydrocephalus. Esotropia is more common than exotropia in this condition but most do not have evidence of sixth cranial nerve paresis, so other factors may contribute to the development of strabismus. A-patterns have been attributed to orbital anatomy and perhaps to the frequently found dysmorphic facial features with an upward directed slant of the lateral canthus.

Of the 112 participants of the study by Anderson et al. in this issue, 42 had strabismus. Esotropia was the most common type of deviation, followed by exotropia. Of the participants with strabismus, 10 were documented as having an A-pattern deviation and 1 a V-pattern deviation. One imaging study demonstrated a link between the location of the spinal lesion and the severity of anomalous brain development, with higher lesions being associated with more severe brain dysmorphology.<sup>1</sup> Given this relation, it is possible that these more severe brain dysmorphic anomalies could significantly affect oculomotor control, resulting in an increased prevalence of strabismus in individuals with upper level spinal lesions. In Anderson et al.'s study, a similar relation between lesion level and nystagmus was observed, with a greater percentage of participants with upper level spinal lesions manifesting nystagmus. Given these findings, individuals with upper level spinal lesions may be at an increased likelihood of oculomotor problems in general.

This study calls to our attention the additional factors aside from hydrocephalus that are associated with strabismus in children with spina bifida myelomeningocele. Some of these factors (lower birth weight and younger gestational age) are also associated with strabismus in general, whereas the association of strabismus and spinal lesion level is likely unique to spina bifida myelomeningocele and may be related to the more severe brain dysmorphology associated with upper level spinal lesions and possibly variations in orbital anatomy in these children.

### REFERENCE

1. Fletcher JM, Copeland K, Frederick JA, et al. Spinal lesion level in spina bifida: a source of neural and cognitive heterogeneity. *J Neurosurg.* 2005;102(3 suppl):268-279.

**Rudolph S. Wagner, MD**  
Editor

---

*Dr. Wagner is on the speaker's bureau of Alcon Laboratories.*  
doi: 10.3928/01913913-20120802-01