Spina Bifida Occulta

Congenital absence of a spinous process and variable amounts of lamina. No visible exposure of meninges or neural tissue.

The following two entities are grouped together under the term spina bifida aperta (aperta from the Latin for “open”) or spina bifida cystica: Meningocele and Myelomeningocele.

Occulta is Latin for “hidden”. This is the mildest form of spina bifida.

In the 17th century, Dutch anatomists provided the first descriptions and initiated surgical management efforts for spina bifida. In the 19th century, the term “spina bifida occulta” was coined and various presentations of spinal dysraphism were appreciated.

In occulta, the outer part of some of the vertebrae is not completely closed

The splits in the vertebrae are so small that the spinal cord does not protrude. The skin at the site of the lesion may be normal, or it may have some hair growing from it; there may be a dimple in the skin, or a birthmark.

Many people with this type of spina bifida do not even know they have it, as the condition is asymptomatic in most cases.The incidence of spina bifida occulta is approximately 10-20% of the population, and most people are diagnosed incidentally from spinal X-rays. A systematic review of radiographic research studies found no relationship between spina bifida occulta and back pain.

More recent studies not included in the review support the negative findings.

However, other studies suggest spina bifida occulta is not always harmless. One study found that among patients with back pain, severity is worse if spina bifida occulta is present.

Among females, this could be mistaken for dysmenorrhea.

Incomplete posterior fusion is not a true spina bifida, and is very rarely of neurological significance.

Current understanding of tethered cord syndrome first began with the understanding and management of spina bifida; this later led to the gradual recognition of spina bifida occulta and the symptoms associated with tethering of the filum terminale.

Terminology

While typically referring to asymptomatic posterior fusion defects, some authors use it as a broad term that encompasses closed spinal defects such as:

Diastematomyelia

Diplomyelia

Dorsal dermal sinus

Spinal lipoma

Posterior neural arch defects, namely spinous and paraspinal clefts

Epidemiology

Reported prevalence range of SBO: 5–30% of North Americans (5–10% is probably more realistic).

Associations

Spina bifida occulta (SBO) may occasionally be associated with diastematomyelia, tethered cord, split cord malformation, lipoma, or dermoid tumor. When symptomatic from one of these associated conditions, the presentation is usually that of tethered cord.

Clinical features

The defect may be palpable, and there may be overlying cutaneous manifestations. Often an incidental finding, usually of no clinical importance when it occurs alone. Numerous reviews have shown no statistical association of SBO with nonspecific LBP. [1) 2)] An increased incidence of disc herniation was shown in one study [3)].

When symptomatic from one of associated conditions, the presentation is usually that of tethered cord; gait disturbance, leg weakness and atrophy, urinary disturbance, foot deformities...,

see Tethered cord syndrome

Diagnosis

Spina bifida occulta usually doesn't cause symptoms. So, it's often found when an X-ray or other imaging study of the spine is done for a different reason. Sometimes spina bifida is diagnosed with an ultrasound after a doctor sees a dimple, patch of hair, or red patch at the base of a baby's spine.

Magnetic resonance imaging or ultrasound of the spine can reveal lipoma and tethering of the cord [4)]

Karaaslan et al. evaluated the pelvic incidence, pelvic tilt, sacral slope, sagittal vertical axis (SVA), T1 pelvic angle, lumbar lordosis (LL), thoracic kyphosis, thoracolumbar alignment, and change in those parameters with age.

Correlation coefficients between age and LL, T1 pelvic angle, and the SVA in patients with TCS due to fatty filum terminale were statistically significant. In addition, correlation coefficients between age and LL and the SVA in patients with SCM were statistically significant. Notably, LL was increased at a statistically significant level with age in patients with TCS and SCM.

Improved knowledge of spinal balance parameters in patients with tethered cord syndrome (TCS) and split cord malformation (SCM) may be helpful in understanding the clinical course of these pathologies, and provide information regarding the success of surgery at the follow-up period [5].

Treatment

Infants with classic cutaneous stigmata of occult spinal dysraphism (OSD), with progressive neurologic, skeletal, and/or urologic findings, present no diagnostic or therapeutic dilemma: they routinely undergo MRI and Spinal cord untethering (SCU). Conversely, in asymptomatic patients or those with fixed, minor abnormalities, the risk profile of these OSD cohorts should be carefully considered before SCU is performed. Irrespective of whether or not SCU is performed, patients at risk for progression should be followed carefully throughout childhood and adolescence by a multidisciplinary team [6].

Books

Occult Spinal Dysraphism

Case series

Spina Bifida Occulta Case Series

1)
van Tulder MW, Assendelft WJ, Koes BW, et al. Spinal radiographic findings and nonspecific low back pain. A systematic review of observational studies. Spine. 1997; 22:427–434
2)
Steinberg EL, Luger E, Arbel R, et al. A comparative roentgenographic analysis of the lumbar spine in male army recruits with and without lower back pain. Clin Radiol. 2003; 58:985–989
3)
Avrahami E, Frishman E, Fridman Z, et al. Spina bifida occulta of S1 is not an innocent finding. Spine. 1994; 19:12–15
4)
Ritchey ML, Sinha A, DiPietro MA, Huang C, Flood H, Bloom DA. Significance of spina bifida occulta in children with diurnal enuresis. J Urol. 1994 Aug;152(2 Pt 2):815-8. doi: 10.1016/s0022-5347(17)32718-0. PMID: 8022022.
5)
Karaaslan B, Gulsuna B, Toktaş O, Borcek AO. Sagittal spinopelvic alignment in tethered cord syndrome and split cord malformation. Br J Neurosurg. 2022 Feb 8:1-6. doi: 10.1080/02688697.2022.2034741. Epub ahead of print. PMID: 35132932.
6)
Tuite GF, Thompson DNP, Austin PF, Bauer SB. Evaluation and management of tethered cord syndrome in occult spinal dysraphism: Recommendations from the international children's continence

society. Neurourol Urodyn. 2017 Aug 9. doi: 10.1002/nau.23382. [Epub ahead of print] Review. PubMed PMID: 28792087.