Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/17824
DOI URL: http://dx.doi.org/10.21474/IJAR01/17824

ISSN NO. 2320-5407

RESEARCH ARTICLE

INCOMPLETE SACRAL SPINA BIFIDA: A CASE REPORT

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Manuscript Info

Manuscript History
Received: 10 September 2023
Final Accepted: 14 October 2023
Published: November 2023

Abstract

Spina Bifida is a developmental defect of vertebral column, when their laminae are not fused and unable to cover the spinal cord dorsally. Eventually, the vertebrae possess bifid spines. Closure of sacral spinal canal is most variable in human anatomy.

Introduction:-

Spina bifida is a developmental defect of the vertebral column in which laminae do not fuse and spinal cord remains relatively unprotected because of absence of bony dorsal wall on spinal cord. Spina bifida may be divided in two types depending upon its exposed or occult condition:

1. Spina bifida cystica - if meninges alone herniate out through bifida, it is known as meningocele or if both meninges and neural tissue protrude out through this defect, this is known as myelomeningocele.
2. Spina bifida occulta - the meninges and/or neural tissue remain underneath skin. This defect is indicated more often by a skin lesion such as a hairy patch, dermal sinus tract, dimple, hemangioma, or lipoma .

The occurrence of spina bifida occulta in sacral region spreading from S1 to S5 has been termed as sacral spina bifida occulta. Many sacra have S5 or also S4 open, exposing the dorsal surface of the fifth sacral body. Rare and complete open sacral wall has also been observed as cases[8].

Radiological studies have investigated the prevalence of this condition in the sacrum in various populations, to determine the level of spina bifida occulta.

Total occult sacral dysraphism from S1 to S5 (dorsal interlaminar dehiscence), forming a channel between the laminae has been reported by Vasilica et al[10]. Sacral spina bifida occulta has been recorded as a congenital anomaly by Kumar and Tubbs[6]. Several studies of this defect have been carried out by many authors on the name of sacral hiatus to improve the failure rate in caudal epidural block.

The spina bifida occulta and associated diseases, including posterior disc herniation, backache, enuresis and neurological abnormalities of the feet, and functional disorders of the lower urinary tract are very common. This enhances the importance of the present study[1][2].

Case Description:

In present case, there is partial fusion of S1 posterior arch and lower four(S2, S3, S4, S5) posterior arches are non-fused. So, there is presence of bifid spine.

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Image 1:- Partially fused 1st posterior arch and lower non fused bifid spine.

Image 2:- Anteriorly fused and normal bodies of sacral vertebrae.

Discussion:-

Spina bifida has overall prevalence of 12.4% in diverse population. Anatomy of sacral spina bifida is clinically important for anesthetists in locating sacral hiatus for nerve blocking, neurologist for bladder and bowel disorders, radiologist for imaging diagnostics, orthopedic surgeons for surgical procedures and academically to anatomists for correlating classes, their development and clinical implications. Presence of spina bifida occulta can lead to low backache with or without neurological signs and symptoms seen more commonly in young adults[(2)(3)].

Meninges may herniate through occult opening between S1 and S2 underneath skin will be injured by even minor trauma. This may cause CSF leakage resulting drop in CSF pressure. Besides this, the sacral nerves will be damaged by external trauma causing weakness in lower limbs, bladder and bowel disorders. Incomplete development of the bones of the dorsal neural arches of the upper sacrum may be a marker of incomplete neurogenesis of the sacral nerves. This causes incontinence where there can be either partial or complete loss of voluntary urination. Almost all people with spina bifida may have some form of bowel incontinence due to damage to lower sacral nerves. Sacral spina bifida occulta is suggested to be linked with a variety of conditions including posterior disc herniation, backache, enuresis and neurological abnormalities of the feet, and functional disorders of the lower urinary tract[(4)(5)]. Attachment of erector spinae and multifidus muscles to dorsal surface may be defective in Sacral spina bifida occulta affecting biomechanical dynamics of vertebral column creating more clinical complications, morphology of sacrum is clinically important for the caudal epidural block performed for the diagnosis and treatment of

lumbospinal disorders. The knowledge of exact topographical anatomy of the sacrum is essential for locating sacral hiatus for such procedures. An important point in caudal epidural block is awareness of the distance between the sacral hiatus and dural sac, anatomically to avoid dural puncture. Presence of sacral spina bifida occulta may increase the chances of damage to sacral nerves and create difficulty in internal fixation of screw. Open sacral canal and associated gaps between vertebral bodies weaken the sacrum and so become more liable to fracture during internal screw fixation and instrumentation or otherwise. Moreover, as the overall strength of the sacral bone due to completely occult sacral bifida reduces so even minor external trauma is likely to cause fracture of sacrum besides other clinical complications[4][6][7].

Conclusion:-

Presence of spina bifida occulta can lead to low backache with or without neurological signs and symptoms seen more commonly in young adults. A thorough evaluation is required to identify causes of low backache which include a detailed history, physical and neurological examination and radiological imaging to confirm the diagnosis.

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