Lumbar Dorsal Hemivertebra – A Case Report

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Introduction:
Hemivertebra is one of the rare congenital vertebral anomalies commonly occurs in lumbar and thoracic spine, in which only one side of the vertebral body develops, resulting in deformation of the vertebral column such as scoliosis, kyphosis or lordosis. A hemivertebra acts as a wedge within the vertebral column, resulting in curvature away from the side on which it is present. Review of literature shows that the incidence of hemivertebra is estimated at 0.5-1.0 per 1000 births, with higher incidence for females compared with males (1&2). Hemivertebra may be associated with other congenital anomalies, which have been reported to be present in 61% of patients (3 & 4).

Case Report:
A 52-year-old male presented in Accident and Emergency department with a complaint of severe low back pain. The pain was located in the lumbar area. Patient did not had any other complaints. No past surgical or medical history. Physical examination showed no significant findings, noneurological deficit and deep tendon reflexes were all normal. A CT scan revealed a partially segmented hemivertebra of second lumbar vertebra (Figure 1).

Discussion:
A basic knowledge of development of vertebral column is important to understanding the patterns of malformation seen clinically for proper diagnosis and treatment.

In the early embryo, the paraxial mesoderm on either side of the developing neural tube differentiates into somites. The somites further differentiate into sclerotomes, groups of cells that ultimately give rise to the vertebral column and rib cage. The sclerotomal cells collect segmentally at the embryonic midline, surrounding the neural tube and the notochord, and form the precursors of the vertebral arch and vertebral body. Any deviation in the normal developmental pattern can give rise to different congenital vertebral anomalies. One of this type is hemivertebrae, result from lack of development of one of the paired chondral centers. Less commonly, posterior hemivertebrae result from failed anterior ossification (5,6&7). The defective vertebra acts as a triangular wedge-shaped ossified structure within the vertebral column, causing contralateral spine deviation at the level of the abnormal vertebra (8 & 9). Hemivertebrae are classified as Type I when there is a defect in formation, Type II when there is a defect in segmentation, and Type III is a mixed type of defect (10 &11). Based on natural history studies, Type I defects have the worst prognosis with progressive deformity and neurological dysfunction (12-15).

The etiology of hemivertebra is unknown. Tanak et al. (16), and Forrester et al. (17), has suggested that hemivertebra may result from abnormal distribution of the intersegmental arteries of the vertebral column. In children hemivertebra may be seen with chromosomal abnormalities, such as Trisomy 18 or Edward’s Syndrome or chromosome deletions (18). Hemivertebra is commonly associated with other skeletal anomalies of the spine, cardiac and genitourinary system anomalies and anomalies of central nervous system. Hemivertebra may be part of syndromes including Jarcho-Levin, Klippel-
Fiel, and VACTERL (19), sometimes hemivertebra may be isolated or may occur in multiple areas within the vertebral column (20 &21). The defect in the notochord is responsible to the formation of cleft vertebrae is developmentally earlier than that which causes a dorsal hemivertebra, as the fusion of the originally two hemilateralprimodia of the vertebral body occurs before the ossification centres start their development.

References:


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**Figure 1: Dorsal Hemivertebra at L2 Level**