

Amalgamation of Various Vertebral Anomalies: A Rare Case Report

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Abstract

Congenital vertebral anomalies are the collection of malformations of spine, which include alterations of the shape and number of vertebrae. Here is a case report of 15 years old male child with a combination of various vertebral anomalies such as hemi-vertebra, block-vertebra, butterfly vertebra, absence of S4 and S5 vertebrae and the coccyx along with agenesis of left kidney who was detected by Karuna Foundation Nepal during its project instance.

Keywords: Congenital vertebral anomalies; Hemi-vertebra; Block-vertebra; Butterfly vertebra; Karuna Foundation Nepal (KFN)

Background

Congenital vertebral anomaly may commonly (global prevalence of 0.5–1/1,000 live births), encounter but an amalgamation of various vertebral anomalies is unusual. Congenital vertebral anomalies are the collection of malformations of spine, which include alterations of the shape and number of vertebrae. This paper does not aim to provide any specific intervention, but to underscore on the available information [1].

Karuna foundation Nepal (KFN) is a non-governmental organization which believes in a world in which each individual, with or without disabilities, has equal access to good quality health care, can lead a dignified life, and can participate as much as possible in community life. KFN approach is entrepreneurial and action oriented, working towards setting up and strengthening existing local health care system, stimulating community participation and responsibility-including health promotion, prevention, and rehabilitation through empowerment of communities. Below is a description of a child with such a rare case who was identified during one of KFN project [2].

Case Report

Mother of 15 years old male child approached KFN, with complain of the inability of her son to have control in the passage of urine and stool since birth. As a support for medical intervention, he was taken to tertiary level hospital by KFN. According to his mother, she noticed the problem when the child started to walk independently and was able to communicate. Child developmental milestones were normal.

Family history: There was no history of consanguinity. All other children were normal.

Physical examination: The child was moderately built. Motor, sensory and reflex examinations were normal with no limb length discrepancy. Cervical scoliosis was noted.

Ultrasound of abdomen and pelvic region shows a hyper echoic focus with faint posterior acoustic shadowing in lower 3rd calyx of right kidney likely nephrolithiasis; dilated right pelvicalyceal structures, indicating Grade I Hydronephrosis, left kidney cannot be visualized (Figure 1).

Impression on MRI were cervical scoliosis with convexity to left, bony defects in anterior and posterior arch of C1 vertebra, absent of left hemi half of C3 vertebra and right hemi half of C3 vertebra with C2 vertebra, right lateral wedging of C5, C6 butterfly vertebra, absent right hemi half of C7 vertebra and fused left hemi half of C7 vertebra with D1 vertebra, absent S4 and S5 vertebrae and the coccyx, reduced C6-C7 and D1-D2 disc space, C3/C4 and C4/C5 disc bulge, lumbar disc bulge,

ligamentum flavum thickening at L4-L5 and L5-S1 levels, left kidney is not well visualized-Agenesis, prominent adenoid and normal screening MRI study of the head (Figures 2-4).

Discussion and Conclusion

Hemi-vertebra is wedge-shaped vertebra, resulting from a lack of formation of one half of a vertebral body. It falls under the spectrum of segmentational anomalies and can involve one or multiple levels. It can be a common cause of a congenital scoliosis. Among the congenital vertebral anomalies, hemi-vertebra are the most likely to cause neurologic problems. The most common location is the mid-thoracic region, especially the T8. Neurologic signs result from severe angulation of the spine, narrowing of the spinal canal, instability of the spine and luxation or fracture of the vertebra. Signs include rear limb

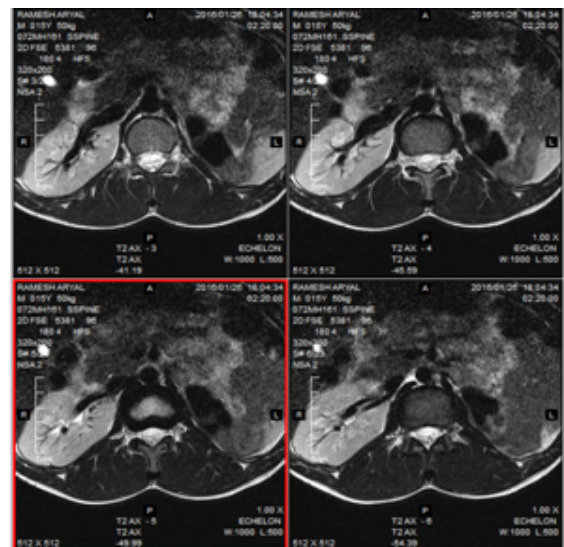


Figure 1: Agenesis of left kidney.

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weakness or paralysis, urinary or fecal incontinence and spinal pain. Most case of hemi-vertebra have no or mild symptoms, so treatment is usually conservative while severe cases may respond to surgical spinal cord decompression and vertebral stabilization [3,4].

Block vertebra occurs when there is improper segmentation of the vertebra, leading to parts of or the entire vertebra being fused. The adjacent vertebra fuses through their intervertebral discs and through other intervertebral joints so that it can lead to blocking or stretching of the existing nerve roots from that segment. It may lead to certain neurological problems depending on the severity of the block. It can increase stress on the inferior and the superior intervertebral joints. It can lead to abnormal angle in the spine, there are certain syndromes associated with block vertebra for example Klippel-Feil Syndrome [5,6].



Figure 2: Shows hemi-vertebra, absent of S4 and S5 vertebrae and the coccyx.

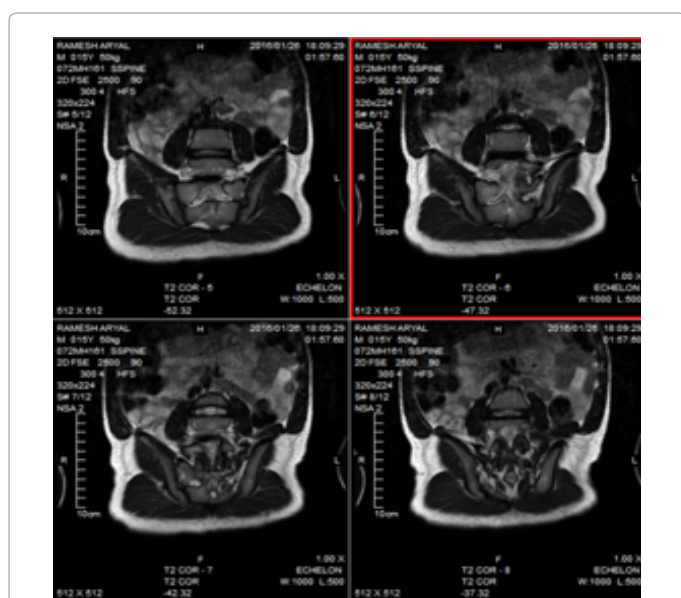


Figure 3: Block-vertebra, absent of S4 and S5 vertebrae and the coccyx.



Figure 4: Butterfly-vertebra, absent of S4 and S5 vertebrae and the coccyx.

Butterfly vertebra is a type of vertebral anomaly that results from the failure of fusion of the lateral half of the vertebral body because of persistent notochordal tissue between them. Also, known as sagittal cleft vertebra, this anomaly is usually asymptomatic and detected incidentally. It may be isolated or associated with other spinal anomalies such as Kypho-scoliosis, hemi-vertebra or Spina bifida, other congenital syndromes or chromosomal defects. This anomaly was first described in 1844 by Rokitsansky, while examining the 12th thoracic vertebra of a 55-year-old man [7-9].

The literature includes few cases reporting of different vertebral anomalies but to our knowledge, association of various vertebral anomalies along with left kidney agenesis in one person has not been described yet.

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