International Journal of Research in Medical Sciences
Nayak G. Int J Res Med Sci. 2022 Sep;10(9):2044-2046
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20222287

Case Report

Unilateral enlarged and bifid transverse process of an atypical lumbar vertebra: a case study

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Received: 09 July 2022
Revised: 01 August 2022
Accepted: 02 August 2022

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ABSTRACT

Sometimes the atypical lumbar vertebra (L5) may articulate with underlying bones like ilium and sacrum. This may give rise to low back pain in the concerned subject. An atypical lumbar vertebra with unilateral bifid transverse process was encountered by the author during routine osteology classes of MBBS students and it was thoroughly examined. On gross examination of the said vertebra, a facet measuring 1.9 cm in maximum length and 0.8 cm in maximum breadth could be observed on the inferior surface of the anterior part of the bifid transverse process. The altered morphology of the vertebra indicates the possible articulation of its transverse process with the underlying ilium or sacrum leading to low back pain (probable cause of Bertolotti's syndrome).

Keywords: Bertolotti's syndrome, Backache, Lumbosacral transitional vertebra

INTRODUCTION

Bertolotti's syndrome is an infrequent cause of low backache in middle aged adults resulting from congenital anomalous fifth lumbar vertebra. The transverse process of the fifth lumbar vertebra presents articulations, pseudoarticulations or full fusion with the underlying sacrum and ilium.[1] Such vertebrae are often referred to as lumbosacral transitional vertebrae and lead to articulation or fusion with sacrum and ilium. They cause backache with limitation of mobility of the spine.[2] If the reason behind low backache is established as lumbosacral transitional vertebra the case is classified as Bertolotti's syndrome.[3] The pathophysiology of low backache in Bertolotti's syndrome is varied. Supposed pathologies are arthropathy of the joints, scoliosis and straining of quadratus lumborum as well as iliacus and psoas major muscles.[2] Deformed lumbosacral transitional vertebra may cause compression of intervertebral disc and consequent neuropathic pain from compression of nerves.[2] Such pain may be quite debilitating for certain individuals.[4,5] Radicular pain is also complained by some subjects.[3-5] The lumbosacral radiography of such patients reveals unilateral or bilateral enlargement of the transverse process of the lumbosacral transitional vertebrae with potential articulation with ilium and sacrum.[7]

CASE REPORT

The abnormal lumbar vertebra (unknown age and sex) with bifid transverse process was incidentally found while teaching osteology to under graduate MBBS students in the department of anatomy of a medical college in Odisha. The anomalous transverse process was studied in detail and its dimensions were noted with slide callipers. The atypical lumbar vertebra (L5) presented an enlarged, bifid transverse process on the left side and the right transverse process was normal (Figure 1 and 2). The bifid transverse process had two parts: anterior and posterior. The anterior part had a maximum length of 2.8 cm and maximum breadth of 1.5 cm. The posterior part

had a maximum length of 2.4 cm and maximum breadth of 1.1 cm. There was a facet measuring 1.9 cm in maximum length and 0.8 cm in maximum breadth of the inferior surface of the anterior part of the abnormal transverse process (Figure 3).

Figure 1: Posterior view of L5 in anatomical position showing bifid transverse process (BT) on left side.

Figure 2: Lateral view of L5 in anatomical position showing bifid transverse process (BT) on left side.

Figure 3: Inferior surface of L5 showing a facet (F) on the under surface of anterior part of the left bifid transverse process.

DISCUSSION

The anomalous transverse process in this case may be abnormally articulating with the sacrum and iliac bone which had been considered a possible cause of low back pain.[1] Nearly no literature was available demonstrating facets on the inferior surface of bifid transverse process of atypical lumbar vertebra. However, radiological evidence of probable articulation of fifth lumbar vertebra with underlying ilium or sacrum had been reported.[8] Axial thin section and coronal volume-rendered MDCT images showed a transitional lumbosacral vertebra, with a left hypertrophic transverse process that articulates with ilium and sacrum in a 40 years old female presenting with left sided sciatica.[8] Axial thin section and posterior coronal volume-rendered MDCT images showed a dysplastic right L5/S1 facet joint in a 43 years old female presenting with low backache and right sided sciatica.[8] Bertolotti's syndrome is referred as the presence of a transverse mega-apophysis in a transitional lumbosacral vertebra, which can be a possible cause of low backache.[8]

CONCLUSION

The current study demonstrated the presence of a well defined facet on the inferior surface of unilateral bifid transverse process of an atypical lumbar vertebra. This can be postulated as a supposed anatomical basis of Bertolotti's syndrome. As literature regarding the occurrence of such anomalous vertebra is scarce, further anatomical and radiological studies are recommended to validate our findings which will benefit radiologists and orthopedicians alike.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Nayak G. Unilateral enlarged and bifid transverse process of an atypical lumbar vertebra: a case study. Int J Res Med Sci 2022;10:2044-6.