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Case report

Limbus vertebra as a rare cause of lumbar pain in young people☆

Juan Pablo Restrepo[a,*], *María del Pilar Molina*[b]

[a] *Facultad de Ciencias de la Salud, Programa Medicina, Universidad del Quindío, Armenia, Colombia*
[b] *Medicina laboral, Valsalud, Armenia, Colombia*

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ABSTRACT

The limbus vertebra is a rare condition poorly described in the medical literature. Marginal intrabody herniation of the nucleus pulposus resulting in the separation of a triangular bone fragment. It usually occurs in children or adolescents mainly in the lumbar spine and causes pain that in most cases improves with treatment with anti-inflammatories.

Vértebra limbus, rara causa de dolor lumbar en jóvenes

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RESUMEN

La vértebra limbus es una rara condición poco descrita en la literatura médica. Se caracteriza por una herniación marginal intracorporal del núcleo pulposo que resulta en la separación de un fragmento óseo de forma triangular. Usualmente se presenta en niños o adolescentes, principalmente en la columna lumbar, y ocasiona dolor que, en la mayoría de los casos, mejora con el tratamiento con antiinflamatorios.

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* *Corresponding author.*
E-mail address: jprestrepo@lycos.com (J.P. Restrepo).

Introduction

Lumbar pain is a common symptom among the general population, affecting both males and females. It is a common cause of medical leave and economic losses for the healthcare systems. There are numerous structures responsible for lumbar pain, including the paravertebral muscles, the spinal ligaments, the vertebrae, and the surrounding nerve structures. Some discomfort episodes may be of short duration and benign, while others may be chronic and relapsing. Therefore, the etiological diagnosis of lumbar pain is challenging and occasionally various medical specialties such are orthopedics, trauma, physiatry, neurology, neurosurgery, and rheumatology should join their efforts for a comprehensive approach of the patient. It is essential for the rheumatologist to acknowledge this condition in order to make an accurate diagnosis and avoid misdiagnoses of other common conditions in routine medical practice. This article discusses a case of lumbar pain caused by a limbus vertebra.

Clinical case

23-Year old female presenting with a clinical condition with 2-years of evolution. The patient complained about lumbar pain that exacerbated with physical activity, and partially improved with rest and occasional use of diclofenac (25 mg). The patient underwent lumbar block with steroids and anesthetic agents, with temporary improvement. She denied any history of lumbar trauma, chronic infections, or autoimmune diseases. The physical examination identified localized pain in the third lumbar vertebra with paravertebral contracture, and no additional findings. No sensitive or motor deficit in the lower extremities was observed; Patrick and Lasegue maneuvers were negative. The probable diagnosis was mechanical lumbar pain, and further studies were required. The following laboratory tests ordered did not reveal any pathological alterations: CBC, ESR, CRP, BUN, creatinine, urinalysis. A lumbosacral X-ray was required in order to elucidate the structural nature of the disease. The X-ray showed an anterosuperior triangular fragment over the L3 vertebral body. No other pathological findings such as osteophytes, vertebral body height involvement, or poor spinal alignment were identified (Fig. 1). Then a 3D reconstruction CT was performed to rule out a vertebral body fracture; the image revealed an anterosuperior limbus vertebra affecting L3, adhered to the vertebral body (Fig. 2). This led to a final diagnosis of anterosuperior limbus vertebra. Pharmacological treatment was administered with naproxen (250 mg 2 times per day, for 7 days), in addition to physical therapy. After 3 months, the patient expressed considerable pain improvement.

Review

Limbus is a Latin word and refers to the border of the Roman tunic; in medicine, *limbus* is a border; for instance, the corneal limbus or the tarsal limbus. A limbus vertebra is a bone fragment adjacent to the vertebral body. Schmorl in 1927 offered the theory that the limbus vertebra as a herniation

Fig. 1 – Lateral view of the lumbar spine depicting a triangular shape in the anterosuperior aspect of L3.

Fig. 2 – CT scan of the lumbar spine with 3D reconstruction, showing an anterosuperior bone irregularity in L3 which is not separated from the vertebral body.

of the pulpous nucleus inside the bone, through the vertebral ring apophysis, preventing the fusion of the vertebral body.[1] It presents during childhood, mainly in the lumbar region,[2] usually toward the middle.[3] Martínez-Carpio et al. described 3 cases of limbus vertebra localized in L4 but the symptoms developed later in adulthood.[4] It mostly develops in the anterosuperior margin, and to a lesser degree, in the posteroinferior margin.[5] The posterior limbus vertebra has been reported as a cause of pain because it compromises the nerve root.[6]

Some authors claim that the limbus vertebra is the result of an injury to the immature skeleton in children and adolescents. A Japanese study associated the condition to a variant of COL11A1 collagen which encodes the Collagen alpha-1(XI) chain.[7] It is more common among athletes, particularly under back loading in flexion, mainly among gymnasts or weight lifters.[8]

According to Horneros et al. most of the limbus vertebra cases are asymptomatic and represent an incidental finding.[9] In contrast, Henales in his series including 15 children showed that pain is a frequent occurrence in limbus vertebra.[10] Numerous subsequent publications have associated the presence of limbus vertebra with pain, and its characteristics have been described as mechanical or, in the opinion of other authors, as inflammatory. None of the publications make reference to the anterosuperior limbus vertebra.

The conventional spinal radiogram depicts the characteristic findings of the limbus vertebra. The condition is diagnosed in the lateral lumbar spine X-ray, as a triangular fragment with sclerotic margins[11]; however, in the case of children or adolescents, this bone segment may have an irregular and poorly defined shape, that mimics an infection or a tumor. Usually no additional tests are needed to make its diagnosis, except in the case of atypical images. The bone scan depicts increased uptake in the vertebral body.[12] The MRI of the limbus vertebra reveals the absence of bone edema, that rules out fractures and is rather a sign of a developmental disorder.[13]

The differential diagnosis includes limbic fracture, spondylodiscitis and vertebral tumors, but the vertebral fracture is characterized by the absence of sclerotic margins.

Little has been said about treatment of the disease. The treatment for limbus vertebra is symptomatic: non-steroid anti-inflammatory drugs, muscle relaxants with or without rehabilitation physical therapy may be used. Surgical approaches are based on removing the mobile fragment, particularly the posterior limbus vertebra,[14] but the results have been poor and some patients report that they continue to experience pain after surgery.[15]

Our case is a typical limbus vertebra presentation, in terms of age of onset, mode of presentation, and lumbar spine location. Medical management with anti-inflammatory drugs and physical rehabilitation helped to control pain, as reported by other authors.

In conclusion, the anterosuperior limbus vertebra should be kept in mind in the differential diagnosis of mechanical lumbar pain, particular in young patients. Knowledge about the characteristic images helps the clinician to make an accurate diagnosis and to deliver timely treatment for the disease.

Conflict of interest

The authors have no conflict of interest to disclose.

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