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L4 / L5 disc herniation in a 13-year-old boy

Hernia discal L4/L5 en niño de 13 años

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Abstract

Background. Low back pain in children and adolescents is relatively frequent, however, lumbar disc herniation is rare, lesser of 2,500 cases have been reported in the literature since 1945. **Clinical case**: A 13 years old male with lumbar pain with associated to L5 left radicular pain, his symptomatology initiated immediate after direct trauma during sports practice, magnetic resonance study showed disc herniation L4 / L5, adding paresis of muscles innervated by L5 root, so discoidectomy was performed, derived to rehabilitation with muscle strength recovery of involved muscles. **Conclusions:** Lumbar disc herniation in children and adolescents is rare, is associated with trauma in 2/3 of the cases, the study of choice is magnetic resonance; conservative treatment is effective for patients in these stages of life

Keywords: low back pain, lumbar disc herniation in children and adolescents.

Resumen

Introducción. La lumbalgia en los niños y adolescentes es relativamente frecuente, sin embargo la hernia discal lumbar es rara, se reportan menos de 2500 casos en la literatura anglosajona desde 1945. **Caso clínico**: masculino de 13 años de edad, con dolor lumbar con irradiación radicular L5 izquierda inmediato a traumatismo directo durante práctica deportiva, la resonancia magnética mostró hernia discal L4/L5, agregándose paresia de músculos inervados por raíz L5 izquierda, por lo que se le efectúa discoidectomía, y rehabilitación con recuperación de fuerza muscular de músculos involucrados. **Conclusiones**. La hernia discal lumbar en niños y adolescentes es poco frecuente, se asocia a trauma en 2/3 de los casos; el estudio de elección es la resonancia magnética; el tratamiento conservador generalmente es efectivo para los pacientes en estas etapas de la vida; el tratamiento quirúrgico eta indicado ante pobre respuesta del conservador.

Palabras clave: lumbalgia, hernia discal lumbar en niños y adolescentes.

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Introduction

Low back pain in the case of children and adolescents is not uncommon, herniated disc at the lumbar level (HDL is a rare condition, being exceptional in children under 10 years of age, in this regard it is reported that: pediatric patients hospitalized for hernia of confirmed lumbar disc (HDL), constitute only 0.5 to 6.8%. The study of Yang (1) et al, carried out in 2017, mentioned that of 215,592 adolescents with low back pain, in 80% of the cases it was not possible to identify the cause of it over 1 year, the most frequent diagnoses being: lumbar sprain (8.9%); scoliosis (4.7%) degenerative disc disease (1.7%) as well as spondylolysis, spondylolisthesis, infection, tumor, fracture in less than 1% and lumbar disc herniation in 1.3% of cases. In the epidemiological study by Zitting (2) et al, to estimate the prevalence of HDL, 12,058 term newborns were followed up to the age of 28 years, finding that no individual required hospitalization for HDL confirmed up to the age of 15 years, presenting the diagnosis in 0.1 to 0.2%. In the review by Dang and Liu (3), 1963 cases divided into 55 series and 8 isolated cases reported from 1945 to 2008 are mentioned, if the 3 series of Kariev (4), Karademir (5) and Linkoaho (6) are added. With a total of 159 cases reported between 2009 and 2017, more the isolated cases, it is concluded that there are less than 2,500 cases in the Anglo-Saxon literature. Upon presentation to the Institution, a 13-year-old male patient who was diagnosed with post-traumatic HDL L4 / L5 with manifestations of root compression, we made this communication.

Clinical case

A 13-year-old schoolboy, which began acutely, upon receiving intense direct trauma (per individual twice his age and weight) in the lumbar region during foot ball practice; Immediately presenting intense pain at the lumbar level, with radiation to the buttock, posterior aspect of the thigh and anterolateral aspect of the left leg, which prevented her from standing up due to its intensity. Transferred to a hospital and assessed by a neurosurgeon; on examination: patient in decubitus, with painful fascies due to left central lumbar pain radiating to the ipsilateral L5 root territory, left dorso-lumbar paravertebral muscles with increased muscle tone, clinical muscle examination of the left pelvic limb not assessable due to increased pain, tenderness in Both pelvic limbs normal, patellar reflexes and normal achilles with the clinical diagnosis of low back pain with post-traumatic L5 root compression, magnetic resonance imaging was performed (Figures 1 and 2 showing: L4 / L5 disc herniation.He was managed conservatively with bed rest for 10 days and non-steroidal anti-inflammatory drugs, improving the symptoms while he remained in decubitus, exacerbating when standing and adding 2/5 on the Daniels scale of the muscles: gluteus medius, biceps femoris, tibialis anterior, fibulae, extensor of the first finger and common extensor of the fingers of the left pelvic limb, so it was decided to perform hemilaminectomy and

extruded material resection, preserving the intradiscal portion, the painful symptoms disappeared 24 hours after surgery, he was referred to rehabilitation at 15 days, finding: patient without pain, with gait impairment due to left gluteus medius weakness, affecting Pawels pelvic balance in the frontal plane, as well as presence of gait in left steppage; The clinical muscle examination of the left pelvic limb showed: gluteus medius, biceps femoris, tibialis anterior, peroneus longus and brevis, extensor of the first finger and common extensor of the fingers with a score of 3/5, normal rest; Patellar reflexes and sensitivity normal, left achilles decreased, capillary filling normal. A rehabilitation program was carried out based on thermotherapy with ultrasound to the lumbar region 10 sessions at doses of 1.watts / cm2 for 7 minutes, electrostimulations to the aforementioned paretic muscles and re-education and muscle strengthening exercises with the Delorme-Watkins technique. Recovery was initially noticeable in the gluteus medius in the seventh session, in the biceps femoris in the tenth; Strengthening of the paretic leg muscles was continued, achieving 5/5 muscle strength at term, he was discharged asymptomatic and with normal gait.

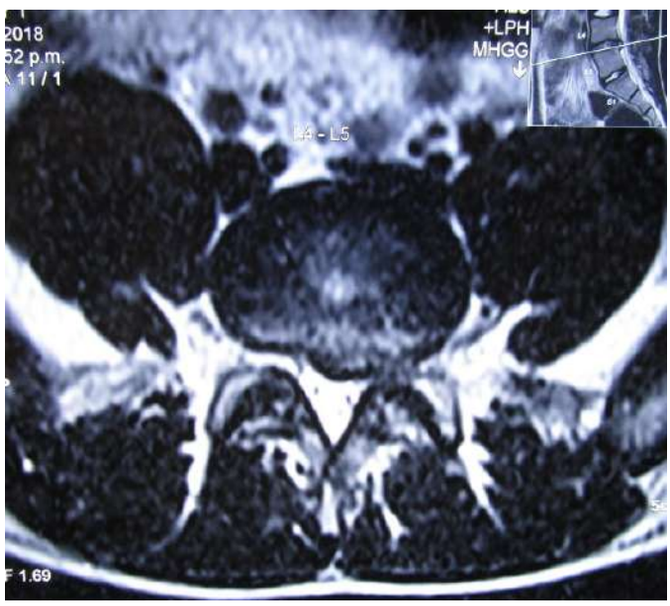
Figure 1. Lumbar spine magnetic resonance images in sagittal views, (A) weighted T2; (B) at T1; (C) fat subtraction, showing: posterior displacement of the nucleus pulposus in the L4 / L5 space, which is partially herniated, associated with rupture and tear of the fibers of the disc annulus in its insertion on the upper border of the body of L5 with a small amount of fluid, the posterior common vertebral ligament remaining intact, in a 13-year-old male

Discussion

The etiology of herniated disc at the lumbar level in children and adolescents is directly related to trauma in up to 2/3 of the cases (7,8), caused during sports practice, excessive weight lifting, extreme flexion and extension of column already fallen; As a second cause, genetic factors have been evoked. Some reports show that 13 to 57% of adolescents with HDL have a first-degree relative with a similar problem; As a third factor, it includes congenital malformations (vertebral anomalies, scoliosis and transitional vertebrae), finally, degeneration is mentioned, originated in repetitive trauma leading to fatigue to the posterior fibers of the disc ring (8).

The HDL in these age groups is presented equally in both genders, only the Linkoaho study (6) et al. mentions an increase in the female after 16 years of age, due to the fact that the woman presents skeletal maturation earlier, in relation to race, it is observed more frequently in Asians.

Figure 2. T2-weighted magnetic resonance image, in axial section at L4 / L5 level showing: left central-postero-lateral disc herniation, occupying the left conjugate canal and foramen, causing L5 root compression, in addition to increased fluid in both facet joints , in a 13-year-old male



From the clinical point of view, in the 75.5% of the cases, children and adolescents report lumbar pain with characteristic radicular irradiation (9) (as in the patient presented), in the rest of the cases the manifestations are of low back pain with pain sciatic, however neurological alterations such as paresis and paresthesia are rarely associated; Upon examination, a characteristic finding is that more than 90% of children and adolescents with HDL have Lasague's sign (10), due to greater tension of the nerve root, which is influenced by growth in these stages of life. Added to the above is the observation that congenital spinal canal stenosis is more frequently associated in adolescents with herniated discs. Currently, reports suggest that: the decrease in the size of the spinal canal is associated with poor results using conservative treatment in adolescent HDL, increasing the need for discoidectomy in this age group (6).

Regarding the location of HDL in children and adolescents, the work of Karademir (5) et al, in a series of 70 cases, the most frequently affected level is L4 / L5 (54%); followed by the L5 / S1 level with 34%; the sub-ligament protrusion is found in 60% of the cases; extrusion in 9% and disc bulge with an intact ring in 31% of patients.
Regarding HDL treatment in these age groups, conservative management consists of: a) bed rest, b) analgesics and anti-inflammatory drugs, c) physical therapy (11) and d) limitation of physical activities; Regarding the results of conservative treatment, in those patients without neurological deficit, improvement is the usual result; The factors involved in those children or adolescents with poor conservative results are related to the quality of the child's nucleus pulposus, which is more hydrated, soft and viscous, since HDL is usually

associated with trauma. Therefore, irradiation lumbar spinal trauma should never be minimized in adolescent patients due to the correlation of trauma and post-traumatic lumbar hernia in this group of patients, since the fibrous ring can present severe ruptures, in addition to the cartilage of the vertebral body is not completely fused to the body of the vertebra, so it can be associated with its detachment; finally, patients at these ages are more active (12).

Surgical treatment is indicated in: a) patients with severe pain refractory to 4–6 weeks of conservative treatment, b) disabling pain that affects activities of daily living; c) cauda equina syndrome; d) progressive neurological deficits and e) association with spinal deformities. The percutaneous discectomy, the open type (13) as well as the microdissectomy (14), show similarity in the resolution of the problem, the good results in the short term present a mean of 94.9% and a variation of 79 to 100%; in the medium term, the average decreases to 86.8% and in the long term it is 81% with a variation between 65 and 100% (3). According to the report by Papagelopoulos (15) et al, in 72 cases undergoing surgery, the calculation of the reoperation rate, using survival analysis, suggests that: the probability that a patient does not require a re-operation is 80% at 10 years and 74% at 20 years. Surgical complications reported in the short term are: hematoma of the surgical area in 1 to 4% and delayed healing in 3% of patients; In the medium and long term, complications include: narrowing of the disc space, foraminal stenosis and degeneration of adjacent discs. Lastly, it is mentioned that in 5 to 10% of cases, recurrent disc herniation may occur.

Authors contribution

All authors participated in the preparation of the manuscript, both in exploration treatment, imaging, and search of references.

Interest conflict

None of the authors have a conflict of interest,

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