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Vertebro-Medullary Hydatid Cyst: Case Study and Review of the Literature

Z. Abbad Andaloussi*, A. Laanait, H. Bakkali, S. ElManjra, S. Lezar, F. Essodegui

Central Radiology Department, IBN ROCHD University Hospital, Casablanca Morocco

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***Corresponding author:** Abbad Andaloussi Z

Abstract **Original Research Article**

Vertebromedullary hydatidosis is rare, accounting for less than 1% of all localizations of the hydatid cyst. It remains the most frequent and most serious manifestation of bone hydatidosis. We have collected 17 cases of vertebromedullary hydatidosis. Our patients have a mean age of 36 and are divided into 9 women and 8 men. The clinical picture is dominated by motor and sensory neurological disorders. The locations were dorsal in 4 cases, lumbar in 11 cases, cervical in 2 cases; vertebromedullary involvement was dominated by osteolysis (14 cases), vertebral compression (4 cases), multiloculated collections (7 cases), and extradural medullary compression (13 cases).

Keywords: Vertebro-Medullary hydatidosis.

INTRODUCTION

Vertebro-medullary hydatidosis is rare representing less than 1% of all hydatid cyst localizations. It remains the most frequent and severe manifestation of bone hydatidosis. The aim of our work is to underline the considerable interest of imaging methods in the orientation of the diagnosis, which has become easier with CT scan and MRI.

MATERIAL AND METHODS

Our work a study is based on a retrospective review of 17 cases of vertebro-medullary hydatid cysts (KH) collected at the Central Radiology Department of CHU Ibn Roch of Casablanca over a period of four years (2014 to 2018).The diagnosis of vertebro-medullary KH was evoked on clinical and radiological data with confirmation obtained intraoperatively. Our patients were explored by CT in 7 cases and MRI in 10 cases.

RESULTS

- Mean age: 36 years.
- Sex ratio: 0.83.
- Rural origin: 9 cases
- Average time to consultation: 8 months

Clinical symptomatology

- Sensory neurological disorders: 3 cases
- Motor neurological disorders: 5 cases
- Sphincter disorders: 2 cases
- Spinal syndrome: 4 cases
- Radiculalgia: 3 cases

Hydatid localizations

- Dorsal: 4 cases
- Lumbar: 9 cases
- Cervical: 2 cases
- Sacral: 2 cases
- Intracanal extension responsible for spinal cord compression in 8 cases

I-CT of the spine

- Lysis of the vertebral body.
- Pedicle lysis (4 cases).
- Involvement of several vertebral bodies (3 cases).
- Extension to the paravertebral soft tissues of a liquid-dense material containing multiple vesicles (7 cases).

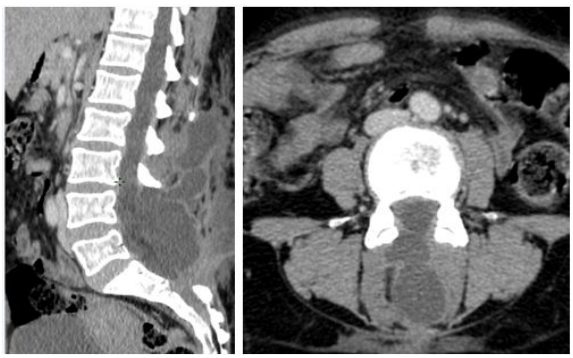

Fig-1: Sagittal and axial section of the lumbar spine, showing an endocanal compartmentalized cystic process of L3 and L4 with extension to the paravertebral soft tissue

II-MRI: 9 CASES

- Mulilocculated cystic formation, with hyposignal T1, hypersignal T2 content; partitions in hyposignal T1 and T2.
- Extension to the pre- and retrovertebral soft tissues (9 cases)
- Endocanal extension (5 cases)
- Compression and spinal cord injury opposite: (5 cases)

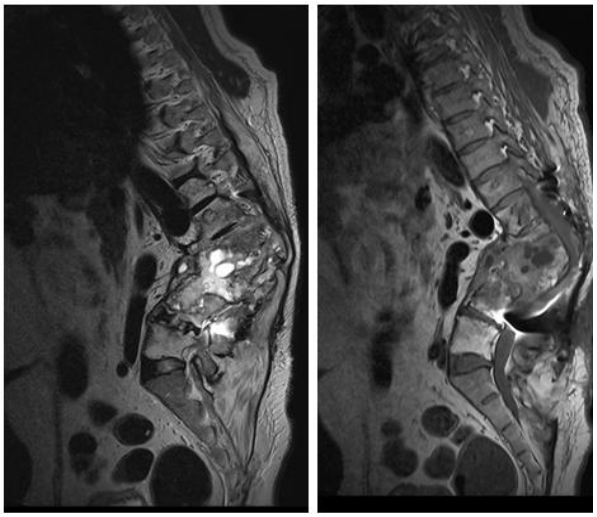

Fig-2: Sagittal T2 and T1 sequence showing cystic mulit process extending from D11 to L4, responsible for angulation of the spine realizing compression and suffering on the spinal cord which is the site of a hypersignal extending to D10

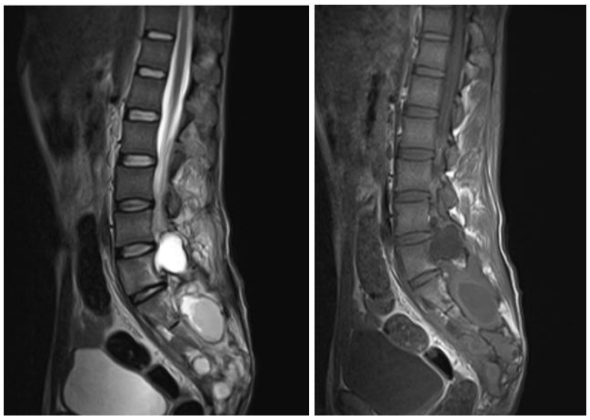

Fig-3: Sagittal T2 and T1 sequence showing a cystic process in T1 hyposignal, T2 hypersignal at L5 and S1 with endocanal extension

DISCUSSION

General

Hydatidosis is a cosmopolitan parasitosis that occurs mainly in sheep-breeding countries (main intermediate host), countries around the Mediterranean, Australia and South American countries. It is due to the development in humans of the dog tapeworm echinococcus granulosus. Hydatid localization in the spine remains rare, representing about 40-50% of bone localizations, which in turn represent 1-2.5% of all hydatid localizations, far behind liver (60%) and lung (30%) involvement [1-3].

According to Braithwaite and Lees [6], vertebromedullary hydatidosis is classified into 5 groups: (1) primary intramedullary cyst, (2) primary extramedullary intradural cyst, (3) primary extradural cyst, (4) vertebral cyst and (5) paravertebral cyst with spinal extension. Primary subdural hydatidosis without osteopathy [group (2)] is an exceptional form of vertebromedullary hydatid cyst. This is due to the poor vascularity of the marrow and its envelopes as opposed to the rich vascularity of the vertebral body and the epidural space. The authenticity of some old observations is still discussed because it is easy to confuse a multivesicular hydatid lesion with a cysticercosis with small darker oval cysts [4, 5].

Clinical

It is a pathology of children and young adults since the average age of patients at diagnosis is 20 years (from 4 to 62 years), without gender predominance (9 females to 9 males). The clinical signs are not specific to subdural hydatidosis, however, one feature is particular to it: the nerve damage is manifested early by a deficit syndrome, contrary to the other more classical vertebroepidural damage. The average delay before the diagnosis is 8 months. The revealing signs are dominated by spinal pain associated with radiculomedullary compression with or without sphincter disorders. This radiculomedullary symptomatology can range from simple radiculalgia to full-blown paraplegia [7].

Positive diagnosis

In endemic countries such as ours, hydatidosis must be systematically considered in the presence of a picture of spinal cord compression associated with a preserved general state.

The positive diagnosis is based on a set of clinical, biological and radiological arguments where only the anatomopathological examination can confirm the disease. Imaging is used to confirm the diagnosis, to assess the lesion and to follow the evolution.

Standard radiography

Allows to specify the topography, the relationships, and the multiplicity of lesions and to orient the subsequent radiological explorations.

The lacunar image of osteolysis is the most characteristic sign; the usually confluent lacunae are of variable size, poorly delimited without condensation of the periphery, often multilocular, separated by refractory partitions. The bony cortex, the external morphology of the bone and the intervertebral disc are long respected.

It may show a deformation of the pedicles whose internal edges normally convex become

rectilinear or even concave. Later, there is an extension to the neighboring bones: adjacent vertebra, rib and iliac bone, somatic compression and disc damage. Absence of osteocondensation and periosteal reaction.

The collections are unilateral, rounded pararachid opacities, sometimes with calcified contours. Intra-spinal involvement is suspected if there is an increase in the interpedicular distance at one level, enlargement of the foramen magnum, pedicle lysis [12].

Fig-4: Radiograph of the lumbar spine (F+P): osteolysis of the transverse process and the right pedicle of L4

CT scan

It has a priority place to localize the expansive process, to orientate the diagnosis, to detect complications, to facilitate the surgical procedure and to specify the assessment of residual and/or recurrent lesions.

Fig-5: CT scan of the lumbar spine in axial section in soft tissue window: Multiple osteolytic images, confluent, hypodense, responsible for destruction of the vertebral body of L3 with intracanal extension compressing the roots of the horsetail. Note the extension to the left psoas muscle.

The CT scan clearly shows the more or less well-limited lytic bone lesions, the vertebral settlements and the disc damage when it exists. It assesses soft tissue involvement and intracanal extension [8, 9].

MRI

It is increasingly replacing the myelography-CT pair. With its multiplanar approach and excellent contrast resolution at the tissue level, it allows precise definition of the topography of the lesion, its extent, its dimension and especially the relationship with the nerve structures.

Images of hydatid vesicles show a hyposignal on T1-weighted sequences and a hypersignal on T2-weighted sequences. In multivesicular cysts, the septa appear intermediate in signal in T1 and hypointense in T2.

Intravenous injection of gadolinium does not change the appearance of the cyst unless it is remodeled: the daughter vesicles no longer contain rock water fluid; signal enhancement may be seen in the wall and septa [10].

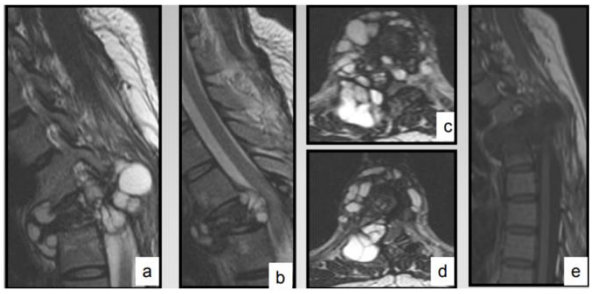

Fig-6: MRI of the dorsal spine: sagittal (a, b) and axial sections in SPT2 (c, d), sagittal section in SPT1 (e): Mulilocculated cystic formation of D4 and D5, with hyposignal T1, hypersignal T2 content; partitions in hyposignal T1 and T2. It is responsible for vertebral compression of D4, extends to the spinal canal, pushes backwards and compresses the spinal cord with signs of spinal cord injury. It also extends to the pre- and retrovertebral soft tissues

Myelography

Exploration with intrathecal injection of contrast is increasingly abandoned in favor of MRI because aggressive. The myelogram shows an intradural and extramedullary cupuliform arrest. It can be coupled with a CT scan to perform a myeloscanner, which identifies the cause of the arrest.

The search for other hydatid localizations must be systematic, based on non-invasive explorations: abdominal ultrasound, pulmonary X-ray or even CT and MRI allowing searching for pulmonary, hepatic, splenic and renal localizations of hydatidosis. In some cases vertebral hydatidosis may be primary [11].

Treatment

The treatment of echinococcosis is always surgical; it consists in lifting the radiculo-medullary compression. The most common approach is decompressive laminectomy, but it is often difficult, sometimes mutilating and does not prevent recurrence.

Recurrence is very frequent because the resection is often incomplete due to poorly limited, infiltrating bone involvement. Its indication and results

depend on the extent of the lesions, their location and the presence or absence of complications.

Medical treatment has not yet been proven and is intended for inoperable forms or those with a poor prognosis, but also as an adjuvant therapy to surgery.

CONCLUSION

Vertebral hydatidosis is considered as an aggressive lesion, which is still endemic in the Maghreb countries. Advances in imaging make CT and MRI the examinations of choice for an accurate lesion assessment in order to improve the prognosis.

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