HYDATID DISEASE OF SPINE

Muhammad Hamid Akram, *Hammad Ahmad Siddiqi, **Saba Asad

Military Hospital, *Combined Military Hospital Rawalpindi, **Holy Family Hospital Rawalpindi

INTRODUCTION

Hydatid disease is a unique parasitic disease that is endemic in sheep and cattle raising areas of the world including Asia, Mediterranean, South America, Australia and Africa. It is caused by infection with larva of tapeworm of genus Echinococcus. Although there are many recognized species of Echinococcus, the ones implicated in human contact and infection include Echinococcus granulosis causing cystic hydatid disease, Echinococcus multilocularis causing alveolar hydatid disease and Echinococcus vogeli causing polycystic hydatid disease.

Bone lesions are rare and reported in about 0.5%-4% of the cases of echinococcosis [1]. The vertebral column, pelvis, long bones and skull are most commonly involved. The spine is involved in about 50% of the cases of bone involvement. Within the spine, thoracic involvement is seen in 40%, lumbar 20%, sacral 20% and cervical spine in 10% [2]

We present a rare case of spinal involvement by Hydatid disease.

CASE REPORT

A 30 years old female patient presented to our outpatients department with a 2 months history of severe low back pain with weakness and numbness in both legs. She was unable to walk and later on developed urinary incontinence. There was no associated history of trauma, fever or any other systemic illness. Her general physical examination was normal. Central nervous system examination revealed decreased power (grade 2/5) and diminished sensations in both legs. Right knee jerk and ankle jerks were absent. Tenderness was present in the lower back on local examination. Examination of cardiovascular, respiratory and gastrointestinal system was unremarkable. Her routine lab investigations and PT / PTTK, LFT'S, serum urea creatinine and electrolytes were within normal limits. Echinococcus antibodies were negative and there was no eosinophilia.

Correspondence: Brig Muhammad Hamid Akram, Classified Radiologist, Military Hospital, Rawalpindi.

On the basis of clinical examination a diagnosis of cord compression was made Radiological investigations included plain films of the lumbosacral spine, which showed a non specific lytic lesion with minimal marginal sclerosis involving the body of the 4th lumbar vertebra causing its partial collapse. The associated end plates were preserved.

An ultrasound of the abdomen was performed, which demonstrated a large cystic hyperechoeic mass in left lumbar region. Exact origin and nature of the mass could not be ascertained.

Bone scan showed a solitary photon deficient lesion in the region of LV4-5.The differential diagnosis of cyst, abscess or tumor was given.

An MRI scan of the spine was performed .Sagittal T1W, T2W; axial T1W, T2W; coronal T1W and T2W; sagittal, axial and coronal post gadolinium images were acquired. There was partial loss of the height of LV4 with diffuse low signal within the body with well preserved adjacent intervertebral discs on T1W sequences. There was high signal with internal heterogeneity on T2W sequences.

In addition there was a large multi-loculated fluid containing mass in the adjacent para spinal musculature extending into the epidural space and causing compression of the theca. Mild enhancement was seen on the post-gadolinium scans.

Based on these findings a diagnosis of spinal hydatid with involvement of the spinal canal and adjacent para spinal soft tissues was made.

The patient was managed surgically. Her exploratory laprotomy was performed; The cystic mass in left lumbar region was excised with clearance and cementing of the body of LV4. The specimen was send for histopathology, which confirmed the diagnosis of Hydatid cyst.

DISCUSSION

Hydatid disease can occur almost anywhere in the body and demonstrates a variety of imaging features .The parasite requires two hosts in its life cycle—Definitive hosts are canines (dogs) and the intermediate hosts are usually grazing animals (sheep or cattle) or humans. Humans may become intermediate hosts through contact with definitive host or by the ingestion of food and water that has been contaminated by dog faeces containing eggs of parasite. Eggs hatch in duodenum and penetrate the intestinal wall. Larva is carried into portal circulation, filtered in capillaries of liver, which is the first line of defense and is therefore the most frequently involved organ (75%). Lungs are involved in 15% of the cases [3]. Echinococcus embryo lodged in an organ develops into a small cyst containing a minimal amount of fluid. The cyst increases by 2-3cm every year, depending upon the resistance of the host [4].The cyst typically has three layers namely Endocyst, which is the inner most layer also called inner germinative layer, the Ectocyst or cyst membrane; and Pericyst, the outermost layer. Cystic fluid is antigenic clear yellow fluid having neutral pH. Daughter cysts detach and sediment in cystic fluid forming hydatid sand.

As stated earlier, bony hydatosis is seen in less than 4% of the cases. Intra-osseous hydatid is predominantly seen in the spongiosa of the bone and consists of minute thin walled cysts. These cysts expand at the expense of the surrounding bone trabeculae and consequently can reach a large size. The histological and gross pathological findings in osseous hydatid differ from other visceral involvement in that the outermost pericyst is not present. Hence, enlarging cystic lesions can expand within the medullary bone.

Osseous hydatid usually presents as a lytic expansile lesion containing trabeculae. These lesions can break the cortex and expand into the soft tissues with subsequent calcification. Pathological fractures can also occur. CT features of spinal hydatid include a soft tissue mass adjacent to the site of bone involvement. The center of the mass contains fluid, which is of low attenuation similar to water. Usually no enhancement is seen on the post contrast scans. Spinal involvement is best imaged by MR due to its inherent superior contrast resolution. Presence

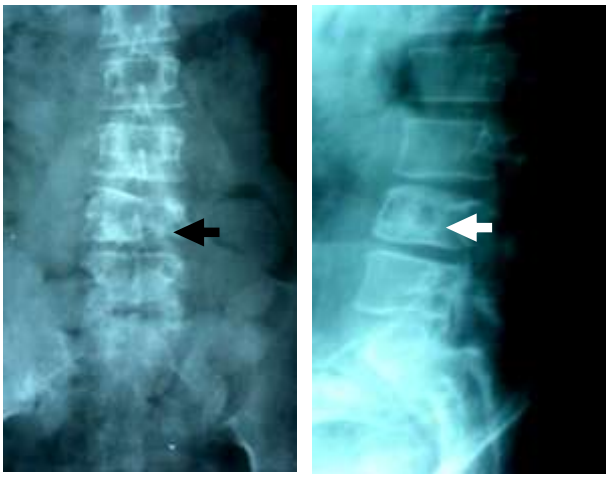

Fig. 1: X Ray Lumbosacral Spine showing a lytic lesion(white arrow) of the body of LV4 causing its partial collapse(black arrow) with well preserved interverteberal disc spaces.

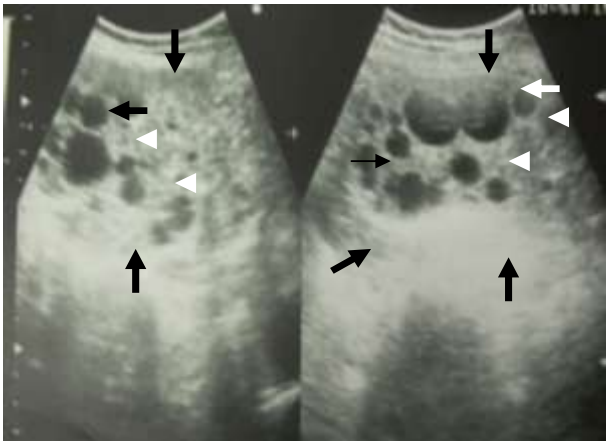

Fig. 2: The transverse ultrasound scan demonstrating a large cystic hyperechoeic mass (black arrows) in left lumbar region containing multiple hypoechoeic areas in it (white arrows)

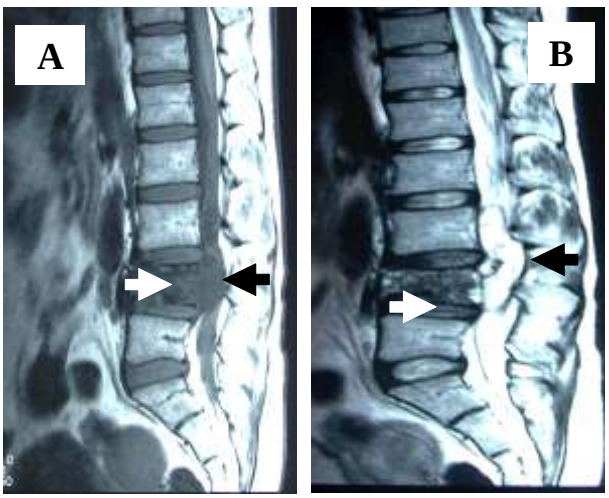

Fig. 3: Sagittal T1W and T2W images showing reduced height and low signal intensity on T1(A) and high signal intensity area on T2 W images(B) in the body of LV4(white arrow) extending into the epidural region behind LV3-LV4(black arrows)

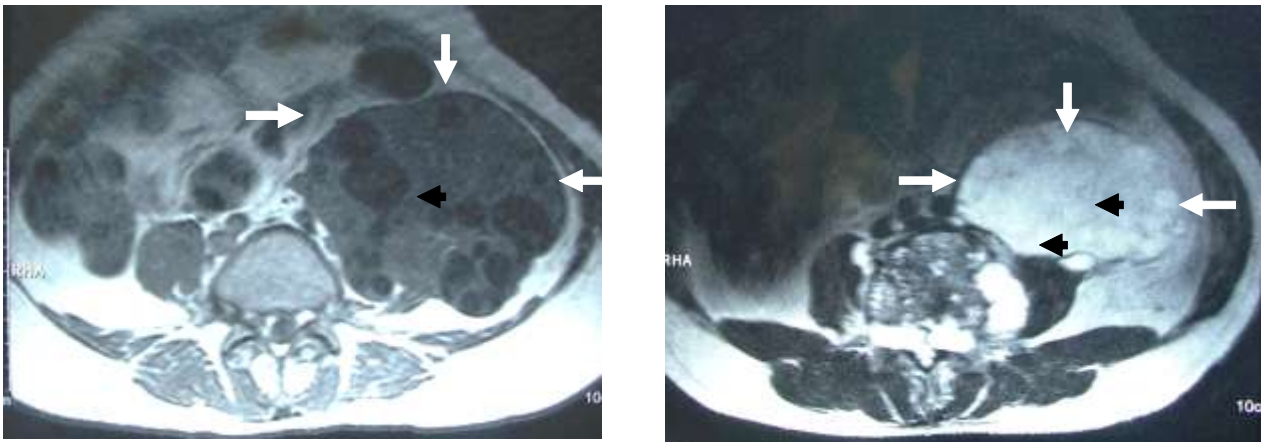

Fig. 4: Axial T1W(A) and T2W images(B) at the level of LV4 showing a multi- loculated mass(white arrows) appearing iso to hypo intense on T1 and hyper intense on T2W sequences in continuation with vertebral lesion extending into the left para vertebral region with multiple well defined fluid filled pockets in it(black arrows)

Fig. 5: Coronal TIW (A) and T2 W(B) sequences demonstrating the same lesion encircling the left psoas muscle (arrow) antrolaterally.

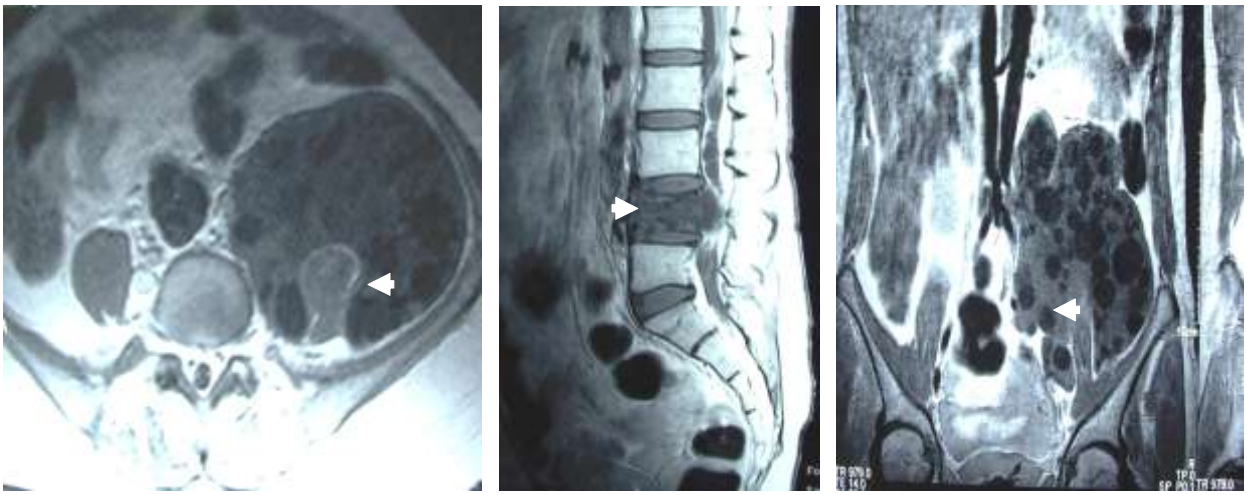

Fig. 6: Axial, sagittal and coronal T1W images with contrast showing mild enhancement (arrows).

of numerous cystic lesions of high signal on T2W sequence is characteristic. The continuity of intra-abdominal and spinal compartments can best be appreciated on coronal MR images.

The differential diagnosis for bony hydatid is the gamut for "a bubbly expansile lesion"which includes fibrous dysplasia, plasmacytoma, giant cell tumour, cartilaginous tumours, metastases

(thyroid, kidney) and brown tumour of hyperparathroidism. In cases of spinal involvement, the differential will also include tuberculosis with associated psoas abscesses and chronic pyogenic osteomyelitis. There are a number of clues, which can aid the diagnosis. These include lack of sclerosis of the surrounding bone and absence of intervertebral disc involvement in case of hydatid disease.

Complications of osseous hydatid include pathological fractures, secondary infection especially due to staphylococcus, rupture into the spinal canal with resultant cord and cauda equina compression, extension into the adjacent para-spinal and pelvic soft tissues and compression of pelvic viscera including bladder and rectum.

CONCLUSION

Hydatid disease is a dynamic entity with varying imaging appearances arising in any part of the body. The hydatid cyst should be kept in mind when a cystic lesion is encountered any where in the body.

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