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CASE REPORT

Attention: Are You Eating Salad? Or is Salad Eating You!

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Abstract
A 30-year-old man presented with progressive pain in the lumbar area of two years duration. It radiated to the right buttock and leg with numbness in the right anterior thigh and dorsum of the foot. The pain did not improve substantially with conservative therapy (non-steroidal anti-inflammatory drugs and physiotherapy). All symptoms were aggravated by standing, walking, and lumbar flexion, and were relieved by lying down. MR imaging of the dorsal spine showed a sharply marginated round mass expanding the 8th thoracic vertebral body resulting in moderate stenosis of the spinal canal. Signal within the lesion on T1-weighted images was hypo-intense with hyper-intense signal character in T2–weighted images containing multiple internal septations. Surgical excision was undertaken and the material was submitted for pathologic analysis. Histological examination confirmed it was a hydatid cyst. The patient's postoperative course was uneventful, with complete resolution of symptoms.

Key words: Hydatid Disease, Echinococcus granulosus, Tape worm, Sclerosis.

Introduction

Hydatid disease is a worldwide zoonosis produced by the larval stage of the tapeworm Echinococcus granulosus. It is a common condition in Libya, prevalent in nearly 12% in children below ten years of age in the eastern region of the country (1,2). An overall prevalence of 2.0% has been reported in an ultrasound survey of hydatid disease in five areas of northwestern Libya. The investigators suggested that the transmission of hydatid disease in Libya is likely indirect by ingestion of eggs from contaminated vegetables or drinking water (2,3). Eggs of taenia/echinococcus were detected in 6%, 25%, 33% and 30% respectively in samples of tomatoes, cucumber, lettuce, and cress obtained from wholesale and retail markets in Tripoli (2). These facts indicate a significant health risk to consumers of such

products. A high index of suspicion should alert clinicians to unusual presentations in patients living in these areas.

Case report

A 30-year-old man presented with a progressive pain in the lumbar area of two years duration. Pain radiated to the right buttock, and leg with numbness in the ipsilateral anterior aspect of the thigh and dorsum of the foot. The pain did not improve substantially with conservative therapy (non-steroidal anti-inflammatory drugs and physiotherapy). The symptoms were aggravated by standing, walking, and lumbar flexion, and were relieved by lying down. MRI of the dorsal spine was undertaken in Philips Intera 1.5T MRI machine (Philips Medical System, Hellevoetssluis, Netherlands)

Table 1: Sites of prediction, locations within the vertebera and type of radiological lesion of expansile lesions of the vertebrae.

Adapted from Reference 4. Key: ++ Most common + Least common

Lesion	Affected Spinal Region				Site of Vertebral Lesion		Type of Radiological Lesion		
	Cervical	Thoracic	Lumbar	Sacral	Vertebral body	Posterior elements	Sclerotic	Osteolytic	Mixed
Osteochondroma	+					+	++		+
Osteoblastoma			++	+		+		+	++
Giant cell tumor				+	+			++	
Osteoid osteoma		+	+			+	++		+
Chordoma				+	+		+	++	+
Angiosarcoma				+	+				++
Osteosarcoma				+	+	+	+	+	++
Chondrosarcoma				+	+		++	+	++
Hemangioma		+	+		++	+		+	++
Metastasis	+	+	+	+		+	++	+	+
Lymphoma			+	+	+		++	+	+
Myeloma	+	+	+	+	++	+	+	++	
Eosinophilic granuloma	+	+	+		+			++	
Aneurysmal bone cyst		+	+	+		+		++	+
Fibrous dysplasia	+	+	+	+	+	+			+
Hydatid cyst				+	+			+	++
Paget's disease			++	+	++	+	++		++

Figure 1A: Sagittal STIR sequence of the dorsal spine shows well defined intra-osseous mass lesion (long white arrow) exhibit lobular outer with hypointense thin sclerotic margin, containing homogenous sharp hyper-intense (Fluid signal) traversed by floating internal septae; note the preserved continuity of both superior vertebral end plate and posterior vertebral surface, no evidence of disc changes .

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	Cervical	Thoracic	Lumbar	Sacral	Vertebral body	Posterior elements	Sclerotic	Osteolytic	Mixed
Osteochondroma	+					+	++		+
Osteoblastoma			++	+		+		+	++
Giant cell tumor				+	+			++	
Osteoid osteoma		+	+			+	++		+
Chordoma				+	+		+	++	+
Angiosarcoma				+	+				++
Osteosarcoma				+	+	+	+	+	++
Chondrosarcoma				+	+		++	+	++
Hemangioma		+	+		++	+		+	++
Metastasis	+	+	+	+		+	++	+	+
Lymphoma			+	+	+		++	+	+
Myeloma	+	+	+	+	++	+	+	++	
Esinophilic granuloma	+	+	+		+			++	
Aneurysmal bone cyst		+	+	+		+		++	+
Fibrous dysplasia	+	+	+	+	+	+			+
Hydatid cyst				+	+			+	++
Paget's disease			++	+	++	+	++		++

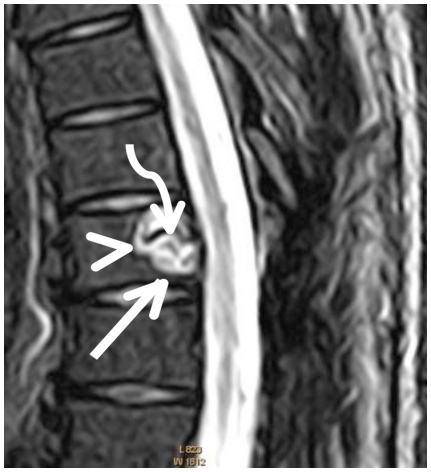

Figure 1 B: Sagittal STIR sequence of the dorsal spine shows well defined intra-osseous cystic lesion (long white arrow) exhibit lobular outer with more clear visualization of the hypointense sclerotic margin (white arrow head), containing floating internal septae (curved white arrow) , no evidence of intra-canalicular extension .

Figure 1C: Sagittal T1 sequence shows 8th thoracic vertebral body mass lesion with mixed signal intensity in the form of iso-intense and hypo-intensity with clearly visualized thin internal septa (arrow), note the clear visualization of the superior end plate continuity .

using sense lumbosacral coil and Sagittal T1, T2 and STIR, Axial T2 sequences performed without contrast. Axial, sagittal and coronal T1 sequences post-Gad-DETPA (0.2 ml/Kg) were obtained. These tests demonstrated a large, well defined and eccentric expansile intraosseous mass lesion depicted at the dorsal element of 8th thoracic vertebral body involving the left side pedicle (Figure 3). The lesion had a smooth inner margin and a rim of bone sclerosis. It resulted in cortical ballooning and subsequently minimal left ventral spinal cord compression without extension into

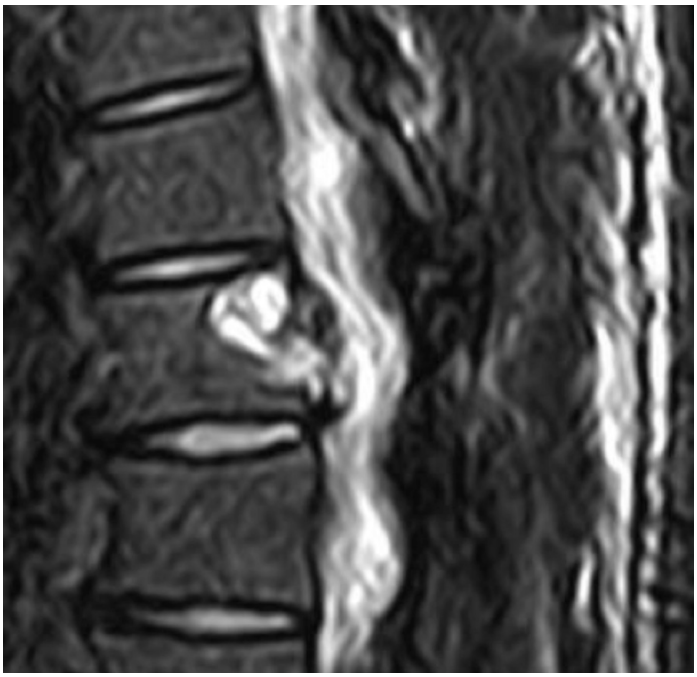

Figure 2A: Sagittal STIR sequence shows the expansile nature of the posterior element 8th thoracic vertebral body cystic lesion , extending posteriorly with resulting compression upon the spinal canal .

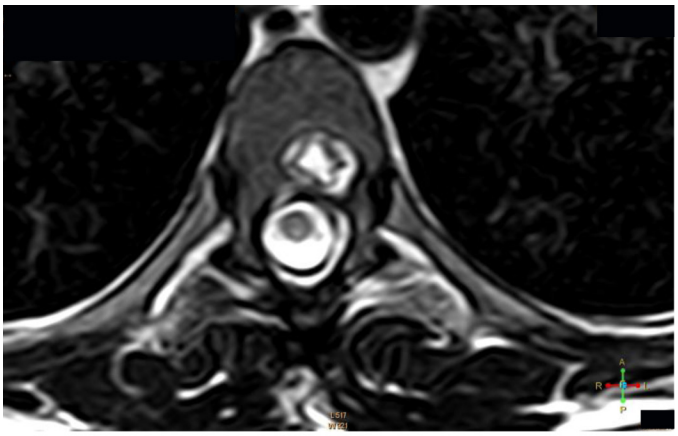

Figure 2 B: Axial T2 sequence at the level of the 8th thoracic vertebral body shows peripherally sclerotic cystic lesion containing daughter cyst which occupying almost the entire mother cyst, no intra-canalicular extension

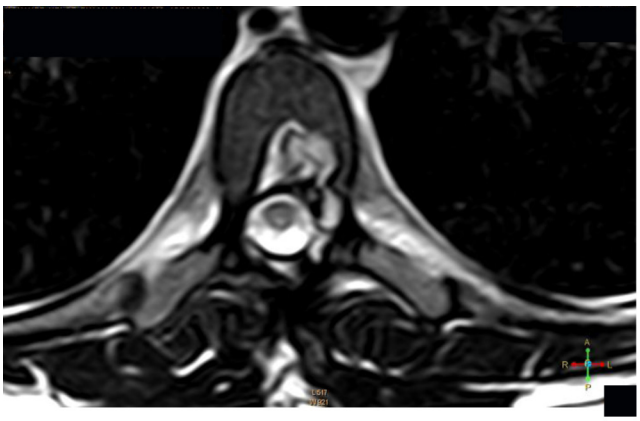

Figure 3: Axial T2 sequence of the 8th thoracic vertebral body showing the extension of the cyst into the Left side pedicle without adjacent bone erosion.

Figure 4 A: Post-I.V Gd-DTPA sagittal T1 sequence shows mild peripheral enhancement

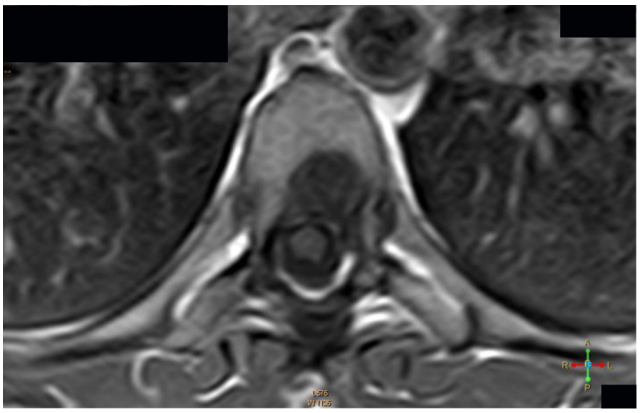

Figure 4 B: Post-I.V Gd-DTPA Axial T1 sequence shows mild peripheral enhancement

the inter-vertebral disc, adjacent ribs, or para-vertebral soft tissues. The lesion exhibited signal character in the form of predominantly low-to-intermediate signal intensity in T1-weighted images (Figure 1 C). T2-weighted images showed high signal intensity with a peripheral rim, and floating internal septa of low signal intensity that produced a multi-cystic appearance (Figure 1A, B and Figure 2A, B). After IV gadolinium-diethylenetriamine (penta-acetic acid-DTPA) administration, peripheral and internal septa enhancement was evident (Figure 4 A, B). Surgical excision was undertaken and the material submitted for pathologic analysis. Histological examination confirmed it to be a hydatid cyst. The patient's postoperative course was uneventful, with complete resolution of symptoms.

Discussion

Numerous benign and malignant disease processes may enlarge an expanded vertebra, and the entire vertebra or a portion of the bone may be affected. In many instances, an expansile lytic lesion may be complicated by pathologic fracture and collapse of the weakened vertebra. It is often difficult to recognize the underlying primary lesion involving the vertebra - an expansile vertebral lesion may be osteolytic, osteoblastic, or mixed (Table 1). The margin of a benign lytic lesion is well defined and sclerotic, whereas an aggressive, malignant lesion shows ill-defined borders with para-vertebral extension. Certain expansile lesions tend to occur in a specific region of the vertebral column. This may be an important clue to the diagnosis (Table 1) (4).

Spinal echinococcosis is a rare disease, accounting for only 0.5-2% of cases (3,5). The most commonly involved bone structures are the spine (35%), pelvis (21%), femur (16%), tibia (10%), ribs (6%), skull (4%), scapula (4%), humerus (2%), and fibula (2%). In bone involvement, peri-cyst formation does not occur, thereby allowing aggressive proliferation in an irregular branching fashion along the line of least resistance, especially the bone canals (6,7,8,9). The parasite replaces the osseous tissue between trabeculae due to the slow growth of multiple vesicles. Over time, the parasite reaches and destroys the cortex and subsequently spreads the disease to surrounding tissues (6,8,9,10). Extraosseous cysts may calcify, whereas intraosseous diseases rarely demonstrate calcification (9).

In the spine, the disease starts in the vertebral body and may spread later to the neural arch and adjacent ribs if the cortex is breached, the cyst may invade the extradural space and cause neurologic deficits. The dura always remains intact (2,11,5,12). Hydatid disease demonstrates a variety of imaging features that vary according to growth stage, associated complications, and affected tissue. Radiologic findings range from purely cystic lesions to a completely solid appearance. Calcification is more common in hydatid disease of the liver, spleen, and kidney. Hydatid disease can become quite large in compressible organs (13). Radiologic and serologic findings can generally help establish the diagnosis of hydatid disease, but an unusual location with atypical imaging findings may complicate the differential diagnosis. Nevertheless, familiarity with imaging findings, especially in patients living in endemic regions, is advantageous in this context (13).

In addition, the features of hydatid cyst on MRI are fairly characteristic (Table 2), where the hydatid cysts are classified into four types on the basis of their appearance, (13,14) though in some reported cases they do not seem to follow a recognized pattern. Thus, the findings can be extremely difficult to differentiate from neoplasia when there is bone destruction with extension into soft tissues and epidural space, but the discs are not involved (14-16). Occasionally, the hydatid cysts can localize in the epidural space without involving the osseous spine (2,11). On MR imaging, the osseous and soft tissue extent will be depicted on sagittal, coronal, and axial views. MR imaging is also superior in demonstrating involvement of neural structures (6,9). In the spine, hydatid disease simulates tuberculosis spondylitis or chronic osteomyelitis. Lack of osteoporosis and sclerosis in involved bone, absence of damage to intervertebral disc spaces and vertebral bodies, paraspinal extension, and thoracic spine involvement of contiguous rib are the most common features of spinal hydatid disease (6,13).

References

1. Kalani, BP, Ojha, SN, Bhargava, RK & Broadhead, RL. Hydatid disease in children in Libya. Annals of Tropical Paediatrics 1984;4:195-9.
2. Abougrain AK, Nahaisi MM, Madi NM, Saied MM, Ghenghesh KS. Parasitological contamination in salad vegetables in Tripoli-Libya. Food Control 2010;21:760-2.
3. Shambesh MK, Macpherson CN, Beesley WN, Gusbi A and Elsonosi T. Prevalence of human hydatid disease in northwestern Libya: A cross-sectional ultrasound study. Annals of Tropical Medicine and Parasitolology 1992;86:381-6.
4. Kumar R, Guinto FC Jr, Madewell JE, David R, Shirkhoda A. Expansile bone lesions of the vertebra. Radiographics 1988;8(4):749-69.
5. Charles RW, Grovender S, Maidoo KS. Echinococcal infection of the spine with neural involvement. Spine 1988;13:47-9
6. Pedrosa I, Saiz A, Arrazola J, Ferreiros J, Pedrosa, CS. Hydatid Disease: radiologic and pathologic features and complications. RadioGraphics 2000; 20:795–817.
7. Torricelli, C. Martinelli, R. Biagini, P. Ruggieri and R. Cristofaro. Radiographic and computed tomographic findings in hydatid disease of bone. Skeletal Radiol 1990;19:435–9.
8. Işlekel S, Erşahin Y, Zileli M, Oktar N, Oner K, Ovül I, Ozdamar N, Tunçbay E. Spinal Hydatid disease. Spinal Cord 1998;36:166–70.
9. Ögüt AG, Kanberoglu K, Altug A, Cokyüksel O. CT and MRI in hydatid disease of cervical vertebrae.Neuroradiology 1992;34:430–2.
10. Braithwaite PA, Lees RF. Vertebral hydatid disease:radiological assessment. Radiology 1981;140:763-6.
11. Jena A, Tripathy RP, Jain AK. Primary spinal echinococcosis Causing paraplegia: case report with MRI and pathologic correlation. AJNR Am J Neuroradiol 1991; 12:560.
12. Levack B, Kemohan J, Edgar MA, Ransford OA. Observations on the current and future surgical management of the hydatid disease affecting the vertebrae. Spine 1986;11:583-90.
13. Pinar P, Mecit K, Fatih A, Selami S, Melike B, Adnan O. Hydatid Disease from Head to Toe. Radiographics; 2003;23:475–94.
14. von Sinner W, Strake L, Clark D, Sharif H. MR imaging of hydatid disease. AJR Am J Roentgenol 1991;157:741–5.
15. Beggs I. The radiology of hydatid disease. AJR Am J Roentgenol 1985;145:639-48Torricelli, C. Martinelli, R. Biagini, P. Ruggieri and R. Cristofaro. Radiographic and computed tomographic findings in hydatid disease of bone. Skeletal Radiol 1990;19:435–9.
16. Michael MA, Ciric IC, Tarkington JA. MR imaging in spinal echinococcosis. J Comput Assist Tomogr 1985;9:398-400.