

Ultrasonographic and MR Findings of Cysticercosis in Soft Tissue : A Case Report¹

Wook Jin, M.D.^{1,2}, Yoon Jung Choi, M.D.³

We describe an unusual case of cysticercosis in soft tissue. On US, a well-defined oval shaped cystic lesion with an inner central hyperechoic portion was noted. This portion showed high signal intensity on T1-weighted images and equivocal enhancement. On MRI, other portions of the lesion showed their cystic nature. Pathologic examination confirmed the presence of cysticercosis and, in particular, the central portion was found to be a mural nodule with scolex. Cysticercosis in the soft tissue and musculature of patients from endemic areas should thus be considered in the differential diagnosis of an incidental mass, especially when this is cystic and has an inner central nodule.

Index words : Soft tissues, MR
Soft tissues, infection
Soft tissues, US
Parasites

In 60% to 90% of cysticercosis patients, the central nervous and neurogenic system is mainly affected(1). Cysticercosis in soft tissue has, however, been reported only in a calcified nodule after infection. We report a case of cysticercosis occurring in the first web space of the left hand as a cystic lesion, and revealed by ultrasound (US) and magnetic resonance imaging(MRI).

Case Report

A 23-year-old man complained that for three months, a palpable mass had been present in the first web space of the left hand.

A simple radiograph revealed no definite abnormality in this area(Fig. 1A); there were neither systemic nor neurologic symptoms, and on brain CT scans, abnormalities such as cystic lesions or calcification were not noted.

On US performed with a 7.5MHz transducer, the

mass showed a well-defined oval-shaped cystic lesion, about 0.8×1.0cm in size, and with a thick capsule and inner central hyperechoic portion(Fig. 1B).

On MRI, T1-weighted MR images showed a well-defined oval-shaped mass of low signal intensity and with an inner high signal intensity portion. T2-weighted MR images showed a high signal intensity mass, suggesting a cystic lesion. Enhanced T1-weighted images demonstrated equivocal enhancement in the central portion of the cyst and relatively strong enhancement around it(Fig. 1C, D, E).

The mass was subsequently excised, and an oval, straw-colored, thin-walled cyst was removed from the first web space of the left hand. On pathologic examination cysticercosis was confirmed; a mural nodule was present within a fibrous pseudocapsule(Fig. 1F).

Discussion

Radiographically, cysticercosis in the soft tissue and musculature shows linear or oval elongated calcification. The long axis of the calcified cysts lies in the plane of the surrounding muscle bundles(2).

The relationship between humans and the pork tapeworm, *Taenia solium*, is twofold. Humans are the

¹Department of Diagnostic Radiology, New Anyang Seongsim Hospital

²Department of Diagnostic Radiology, Pundang CHA General Hospital

³Department of Anatomical Pathology, Pundang CHA General Hospital
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Address reprint requests to : Wook Jin, M.D., Department of Diagnostic Radiology, New Anyang Seongsim Hospital, # 695-207 Anyang 3-dong, Manan-gu, Anyang, Kyonggi-do, 430-013 Korea. Tel. 82-343-449-2429
Fax. 82-343-448-5784 E-mail. jinooki@hitel.net

only definitive host of the adult tapeworm, the parasite inhabiting the intestine; although the usual intermediate host is the hog, humans may fulfil this role harboring the larval stage, *Cysticercus cellulosae*. In this latter case, deposits of the larval form of the tapeworm may appear in subcutaneous and muscular tissues and in a variety of viscera, including the heart, brain, lung, liver, and eye. When the larvae die, a foreign body re-

action may ensue, leading to hyalinization, mineralization, and calcification(2).

Escobar(3) classified the pathologic manifestations of neurocysticercosis into the following four stages: vesicular, vesicular colloidal, granular nodular, and nodular calcified. During the different stages, patients may have multiple lesions.

Cysticercosis in the soft tissue and musculature is,

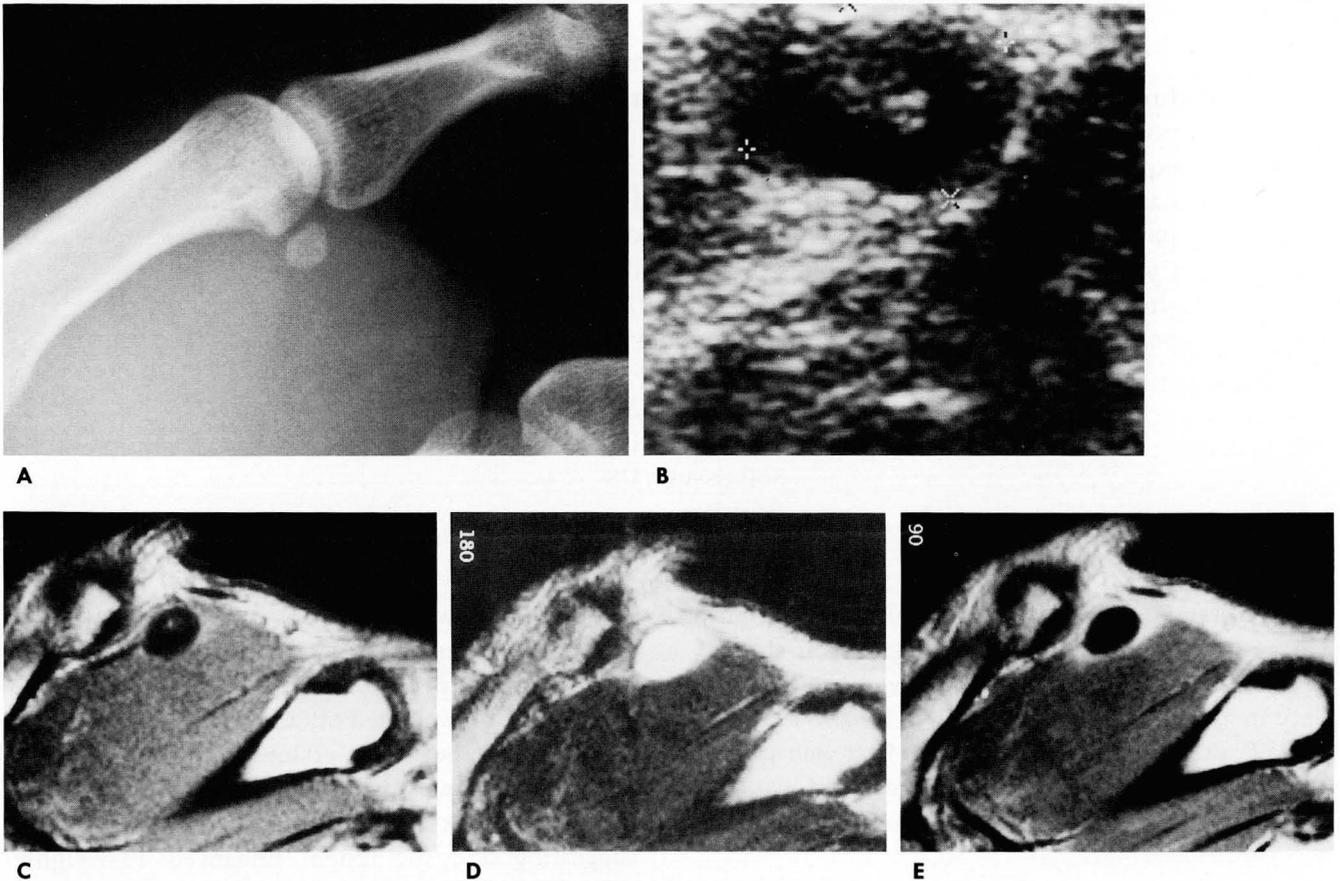


Fig. 1. 23-year-old man who presented with a palpable mass in 1st web space of left hand

A. On radiograph, no definite mass or calcification is visible in 1st web space of left hand.

B. On US, relatively well-margined oval shaped lesion is noted. This lesion shows inner hyperechoic portion (mural nodule) and surrounding anechoic cystic portion. And relatively thick capsule with echogenicity is visible. This lesion is measured about 0.8×1.0 cm.

C. T1-weighted spin-echo MR image shows well defined oval-shaped low signal intensity with inner high signal intensity portion.

D. T2-weighted spin-echo MR image shows high signal intensity, which suggests cystic lesion.

E. Gd-DTPA enhanced T1-weighted spin-echo image reveals equivocal enhanced central portion and relatively strong enhancement out of cyst.

F. Photomicrograph of specimen shows a mural nodule (open arrows) attached to inner side of cyst wall (solid arrows) that is composed with fibrous tissue (fibrous pseudocapsule). This mural nodule has the scolex at the inner end of a spiral canal.

however, not classified as neurocysticercosis. This is probably because under these circumstances there are no symptoms, but instead, only a mass effect during the early stage. In addition, cysticercosis in soft tissue and musculature is not visible on radiographs, except as calcification during the late stage. In addition, isolated cysticercus lesions can cause diagnostic problems (4, 5), and a cystic mass such as an epidermoid, ganglion, or synovial cyst in soft tissue should thus be differentiated.

This case was found incidentally, due to the effect of the mass, but on MRI and US this is visible as a lesion that at a later stage is classified as the 'vesicular colloidal' or 'granular nodular' stage of neurocysticercosis. During the vesicular colloidal stage the larva begins to degenerate; the cystic fluid becomes turbid and its capsule thickens. At this stage, because of humoral and tissue responses to cysticercosis, surrounding edema and enhancement are noted on MRI. The enhancement results from an inflammatory reaction caused by the degenerating larva, which is known to release metabolic products(6, 7, 8). During the granular nodular stage, nodular or micro-ring enhancement is noted, but the scolex is calcified. It is, however, difficult to separate later stage cysts radiologically, since there is no clear dividing line between the vesicular colloidal and granular nodular stage(6). Because microscopic examination showed no calcification of the scolex, however, this case was more likely to be at the vesicular colloidal stage.

In conclusion, cysticercosis in the soft tissue and musculature of patients from endemic areas should be considered in the differential diagnosis of an incidental mass, especially when on US, this shows an anechoic peripheral portion with an inner hyperechoic nodule, and on MRI, a cystic mass with a central nodule and surrounding enhancement.

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연부조직 낭미충증의 초음파 및 자기공명영상 소견 : 1예 보고

¹ 새안양성심병원 진단방사선과

² 분당 차병원 진단방사선과

³ 분당 차병원 해부병리과

진 욱^{1,2} · 최 윤 정³

연부조직에서의 낭미충증은 주로 쌀알 모양의 여러 석회화 병변을 보고 진단한다. 그러나, 연부조직에서 석회화 병변을 가지지 않고, 단일 낭성 병변을 보인 낭미충증 1예를 경험하여 이를 보고하고자 한다. 이 병변은 초음파 검사에서 내부 고에코의 부분을 가진 경계가 분명한 낭성 병변으로 보였다. 내부 고에코부는 자기공명영상에서 T1강조영상에서 고신호강도를 보였으며, 조영증강 정도가 분명치 않았고, 나머지 부위는 모든 영상에서 낭성으로 보였다. 병리조직검사에서 이 병변은 낭미충증으로 확진되었고, 특히 초음파검사에서 병변의 내부에서 보인 고에코부는 두절을 포함한 벽재성 소결절(mural nodule)이었다. 그러므로, 연부조직내 병변이 내부 소결절을 가진 낭성병변일 경우, 감별진단에 연부조직 및 근육내 낭미충증을 포함시켜야 할 것이다.

《저작권에 관한 동의서》

라는 제목의 논문이 대한방사선의학회지에 출간될 경우 그 저작권을 대한방사선의학회에 이전한다.

저자는 저작권이외의 모든 권한 즉, 특허신청이나 향후 논문을 작성하는데 있어서 본논문의 일부 혹은 전부를 사용하는 등의 권한을 소유한다. 저자는 대한방사선의학회지로부터 서면허가를 받으면 타논문에 본논문의 자료를 사용할 수 있으며 이 경우 자료가 발표된 원논문을 밝힌다. 본논문의 모든 저자는 본논문에 실제적이고 지적인 공헌을 하였으며 논문의 내용에 대하여 공적인 책임을 공유한다.

본논문은 과거에 출판된 적이 없으며 현재 타학술지에 제출되었거나 제출할 계획이 없다.

제 1저자/ 년 월 일

제 2저자

제 3저자

제 4저자

제 5저자

제 6저자

[분야 : _____]

본 동의서는 원고에 기술된 순서대로 전 저자의 서명이 있어야 함.

대한방사선의학회 원고 최종 점검표

- 원고 1부, 사진 1부를 동봉한다.
- 행간 여백 1행(double space)에 21×30cm (A4) 용지에 작성한다.
- 원고배열은 한글과 영문으로 기재된 표지, 내표지, 초록(한글과 영문), 서론, 대상 및 방법, 결과, 고찰, 참고문헌, 표, 사진설명의 순으로 한다.
- 초록은 목적, 대상 및 방법, 결과, 결론으로 나누어 기술한다.
- 영문초록 하단에 색인단어 (Index Words)를 기입한다.
- 저작권에 관한 동의서에 전 저자가 서명한다.
- 투고규정내의 저자 점검사항을 점검하였다.