Case Report

An Intramuscular Cysticercosis, A Case Report with Correlation of Magnetic Resonance Imaging and Histopathology

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The authors report a case of a solitary intramuscular cysticercosis in a 47-year-old female who presented with a mass in the right elbow for five years. The magnetic resonance imaging (MRI) findings revealed a cystic mass of 1.5 cm. in size located at the periphery of the pronator teres muscle; the T1-weighted MRI showed hypointensity mass with internal content that was more obviously seen on T2-weighted image and T1-weighted with fat suppression after gadolinium administration. The authors could not recognize perilesional edema in the MRI that corresponded with the histological findings of chronic inflammatory process in combination with foreign body giant cell reaction. The scolex could not be seen in the imaging but could be identified in the histopathological sections.

Keywords: *Soft tissue, Intramuscular cysticercosis, Magnetic resonance, MRI, Cyst*

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Cysticercosis is an endemic disease in developing countries. It has a tendency to increase in Western countries and becomes a "globalized" disease due to the influx of immigrants from endemic areas[1,2]. Cysticercosis can affect various organs ranging from the brain, spinal cord, soft tissue, heart, etc. The clinical manifestations of patients vary upon the sites of larval encystments[3,4]; the most worrisome symptoms are neurological disorders due to the involvement of the brain and spinal cord. Most cases with soft tissue involvement presented with multiple cystic lesions in the soft tissue and the central nervous system[5,6]. Cases that presented with solitary lesion were rare and often caused difficulty in differentiating from other soft tissue lesions especially, neoplasms, and required image study. However, unlike neurocysticercosis of which the characteristics and variations of image findings are well recognized, the descriptions of lesions for soft tissue and intramuscular cysticercosis still require clarification due to the limited number of reported cases[7-9]. To the authors' best knowledge, there have been only eight cases from three reports regarding MRI study of soft tissue cysticercosis in English literature[10-12]. It was the authors' purpose to report a case of intramuscular cysticercosis with magnetic resonance imaging (MRI) study in correlation with histopathological findings.

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Case Report

A 47 year-old- female presented with a mass in the right elbow for almost 5 years. She felt that she had painful sensation with reddening and swelling around the lesion at times. Physical examination revealed a mass of 1.5 cm in size in the right elbow. No nodule was found in other parts of the body. No neurological signs and symptoms were detected. The lesion was soft in consistency, movable and showed mild tenderness. Other systems were within normal limits. The MRI was performed and revealed a cystic mass of 1.5 x 1.2 x 0.9 cm in vertical, transverse and anteroposterior dimensions, respectively, located at the periphery of the pronator teres muscle; the T1-weighted

Fig. 1 A) Sagittal T1- weighted
B) T2-weighted, MR images revealing a small well-defined elliptical shaped cystic lesion with internal content located in the periphery of the pronator muscle (arrows)

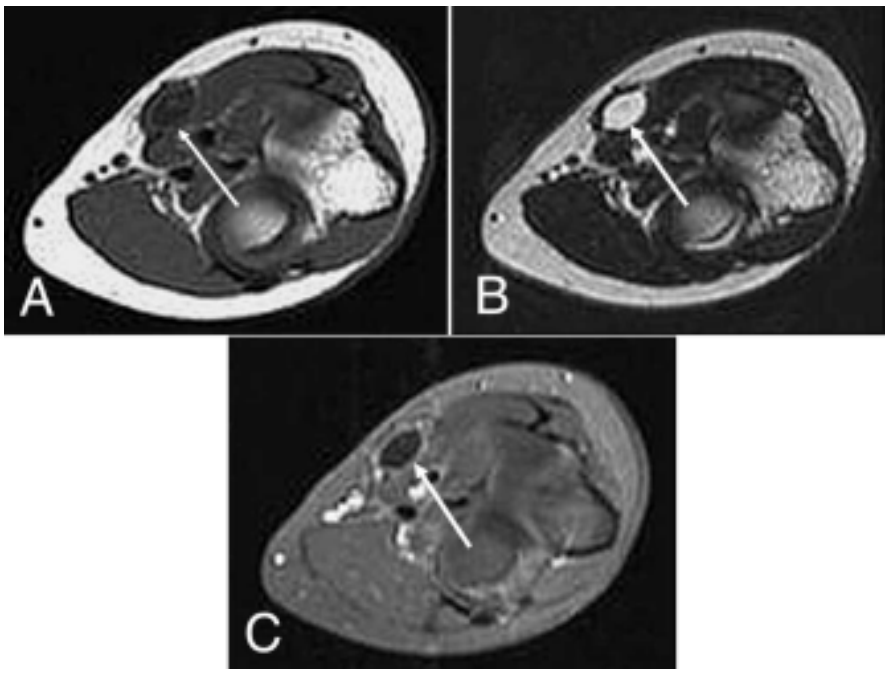

Fig. 2 A) Axial T1-weighted
B) T2-weighted, and C) T1-weighted with fat-suppression after gadolinium administration, MR images revealing a cyst locating at the periphery of the pronator teres muscle (arrows)
Surrounding muscle tissue appeared normal, without edema
Note that the internal content of the cyst was more obviously seen on T2-weighted image and T1-weighted with fat suppression after gadolinium administration

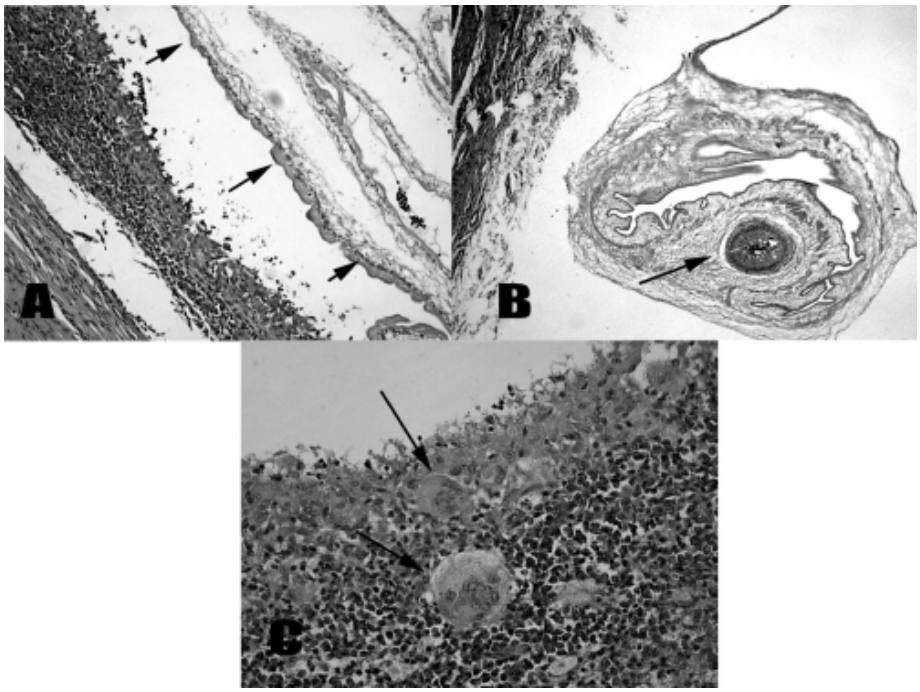

Fig. 3 Photomicrograph demonstrating
A) A cyst containing a parasitic larva characterized by thick tegument with knobby projections (arrows) and subjacent loose connective tissue (H&E section; original magnification x 40)
B) A scolex with a sucker (arrow) (H&E section; original magnification x 100)
C) Numerous histiocytes, few multinucleated foreign body giant cells (arrows) and abundant mature lymphocytes infiltrating throughout the wall of the cyst

MRI showed hypointensity mass with internal content which was more obviously seen on T2-weighted image and T1-weighted with fat suppression after gadolinium administration. No perilesional edema was found (Fig. 1, 2). The imaging diagnosis was an intramuscular cystic lesion, which included differential diagnosis of myxoma, hemangioma, and cysticercosis. The lesion was excised and the histological findings revealed a cystic lesion containing degenerated parasitic larva. The parasitic larva showed thick integument with projections and the inner stroma was myxomatous (Fig. 3A). A scolex with sucker was readily identified (Fig. 3B). The definitive diagnosis was cysticercosis. The cyst wall showed the presence of multinucleated foreign body giant cells intermingling with admixture of lymphocytes, plasma cells, and histiocytes (Fig. 3C). The patient was uneventful until last seen four years later.

Discussion

Human cysticercosis is caused by encysted larvae of the tapeworm Taenia solium that resulted from either ingestion of food or water contaminated with viable eggs of *T. solium* or regurgitation of proglottids of an adult worm from the intestine into the stomach during the episodes of violent vomiting[13]. Cysticercosis when presented with multiple lesions in the soft tissue, usually does not make difficulty in diagnosis; the hallmark in the plain radiography was multiple elliptical calcifications, so-called "millet seed" appearance[14]. The authors' case presented with solitary intramuscular cysticercosis since she did not experience any other nodule or neurological symptoms that were confirmed by thorough physical examination. A solitary soft tissue cysticercus lesion was usually clinically confused with lipoma, neuroma, neurofibroma, sarcoma, myxoma, or even tubercular lymphadenitis and further radiologic investigations especially MRI were required[12]. The definitive diagnosis of cysticercosis in MRI study, as described by Jankharia et al, required the presence of identifiable scolex that appeared as a linear round structure attached to the wall of the cyst[12]. However, two of the six cases reported by Jankharia et al and some cases described by other investigators including the present case, did not recognize the appreciable

scolex in the MR images and caused difficulty in differentiating from other lesions including myxoma, ganglion cyst, hydatid cyst, and hemangioma[12,15-18]. In such instance a biopsy might be required. It was observable from the present case that the scolex might not be identified in MRI in spite of its real existence in the lesion as demonstrated by histologic section; this masking effect might have resulted from tissue reaction of the host and degenerations of the parasite. Jankharia et al also mentioned that the image in cysticercosis lesion showed signs of edema in the perilesional area[12]. However, the authors also failed to demonstrate that sign; the possible reason might be that the lesion in the presented case implied chronic inflammatory process since the cyst wall showed heavy infiltration with chronic inflammatory cells intermingling with histiocytes and multinucleated foreign body giant cells in the histologic section (Fig. 3A and C). The parasitic larva in the lesion exhibited thick integument with knobby projections and possessed a scolex; the body stroma was made up of loose connective tissue (Fig. 3A and B). The histological appearance of the parasite could mimic other species of tapeworms including sparganum, coenurus, and echinococcus. However, the sparganum could be excluded since when inhabited in the host tissue it should not exhibit presence of a scolex[19]. Again, the possibility of being coenurus or echinococcus was also unlikely because these parasites usually possessed numerous scolices and formed bigger cystic lesions[13,17,19].

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รายงานผู้ป่วยที่มีซีสต์ของพยาธิตัวตืดหมูในกล้ามเนื้อโดยแสดงความสัมพันธ์ระหว่างภาพ MRI และจุลพยาธิวิทยาของพยาธิสภาพ

วรชัย ศิริกุลชยานนท์, สุภนีวรรณ เชาว์วิศิษฐ

ผู้ป่วยหญิงอายุ 47 ปี มีซีสต์ของพยาธิตัวตืดซึ่งมีลักษณะเป็นก้อนที่กล้ามเนื้อบริเวณข้อศอกขวาประมาณ 5 ปี ภาพ MRI แสดงซีสต์ ขนาด 1.5 ซม. ในกล้ามเนื้อ pronator teres ซึ่งมีลักษณะเป็น hypo-density ใน T1-weighted image และ มีสิ่งบรรจุภายในที่ปรากฏชัดใน T2-weighted image และ T1-weighted image after fat suppression หลังจากฉีดสาร gadolinium ภาพ MRI ต่างจากรายงานอื่นที่ไม่พบลักษณะ edema รอบรอยโรค ซึ่งสอดคล้องกับจุลพยาธิวิทยาแบบอักเสบเรื้อรัง และต่างจากรายงานอื่นเช่นกันที่ไม่พบ scolex ของพยาธิจากภาพ MRI แต่สามารถพบใน การตรวจชิ้นเนื้อทางพยาธิวิทยากายวิภาค