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Case Report

A Case of Myoneurocysticercosis in an 8 Year Old Boy

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Abstract: We are presenting an eight year old boy with localised intramuscular neck swelling of the right sterno-cleido-mastoid (SCM) with minimal tenderness which was found to contain scolex of cysticercus parasite (Myo-cysticercosis) with concomitant asymptomatic involvement of multiple parenchymal ring enhancing lesions of the brain consistent with Neuro-cysticercosis in various stages of its development. We highlight the importance of screening of the brain in patients with intramuscular swellings of recent origin.
Keywords: cysticercus parasite, Neuro-cysticercosis

INTRODUCTION

Cysticercosis is an infestation of human body through the larval form of pork tape worm, Taenia solium(cysticercus cellulosae).The occurrence of cysts in humans was in order of central nervous system, vitreous humour of eye, striated muscle, subcutaneous tissue and rarely in other tissues. Myocysticercosis often goes unnoticed for life of the patient. Myoneurocysticercosis is simultaneous involvement of muscle and the brain with cysticercosis. We are presenting a case with symptomatic neck swelling which enroute the asymptomatic CNS disease, highlighting the importance of brain screening with muscular swellings of recent origin.

CASE PRESENTATION

An otherwise healthy eight year old boy presented to us with pain and swelling in right lower region of neck of 8 months. It was insidious in onset, gradual in progression, increased in size to attain the present size of 2 x 1 cm since 8 months. The pain is of dull aching in nature with no aggravating and relieving factors. He denied any history of constitutional symptoms such as fever, night sweats, fatigue or weight loss during this period. No history of trauma. The child`s academic performance was good and his medical and family history was noncontributory. Patient has mixed diet habits, but did not consume pork any time. He denied for any contact with animals raised for food. No h/o increase in size during cough. No h/o painful neck movements, painful deglutination. No h/o fever, dental caries, oral ulcer. No h/o similar swellings over other parts of body.

On physical examination there was a single swelling in right lower region of neck. Skin over the region was normal. There were no signs of inflammation. Mild tenderness over palpation. Deep palpation revealed a non pulsatile, firm globular swelling of size 2 x 1 cm in dimension with indistinct margins. The swelling was not adherent to skin and probably laying plane deep in the SCM muscle. No other swelling was encountered else where in the body. Swelling was reducing in size upon contraction of right SCM muscle(Fig-1a-Fig-1b).

Systemic examination revealed no abnormality. Clinical possibilities of Lymphnodal swelling, rhabdomyoma, neurofibroma and pseudo tumour were considered.

Ultrasound examination of neck almost confirmed the cyst being parasitic one. Presence of hypoechoic cyst with eccentrically placed hyperdense

signal (scolices) within it and surrounded by inflamed hypoechoic muscle of 2 x 1 cm dimension(Fig-2a).

He had mild eosinophilia (6%) in blood evaluation. It was necessary to rule out presence of cysts in more frequently involved and important sites. So patient undergone CT scan(Fig-2b-2c) and MRI Brain(Fig-3a-3d) which revealed surprisingly multiple Cysticerci cysts in various stages of its development.

He was treated surgically with excision biopsy of the Right SCM cystic swelling which revealed bundles of skeletal muscle fibres with stellate abcess surrounded by multiple non-caseating granulomas and heavy collections of eosinophils in addition to mononuclear cells. Also there was focus of calcification. Histopathological features were in favour of "parasitic infestation"(Fig-4). EEG was normal and CSF analysis was also normal. For Parenchymal Neurocysticercosis, he was treated with combination of steroids and albendazole for 3-4 weeks. Patient improved with reduction in number of the lesions.

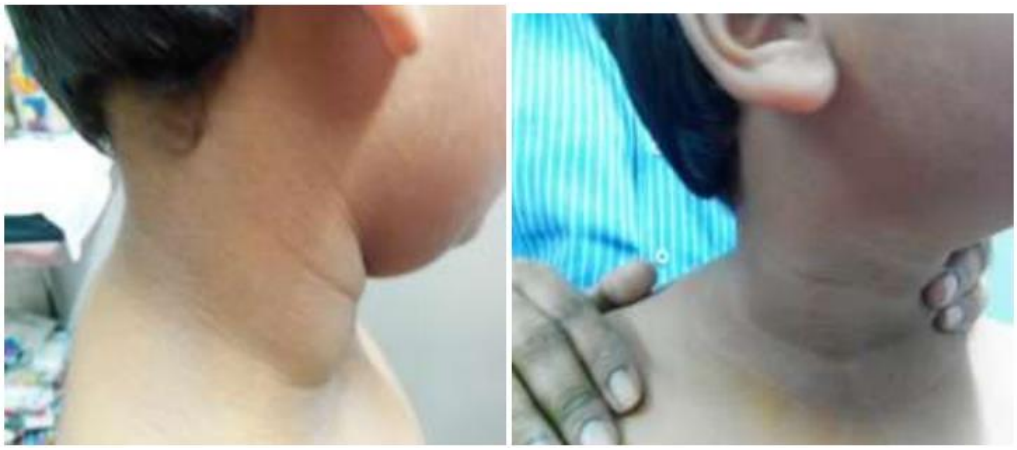

Fig-1: Swelling of right sternocleidomastoid muscle visible from the sides and reducing on contracting the muscle suggesting intramuscular

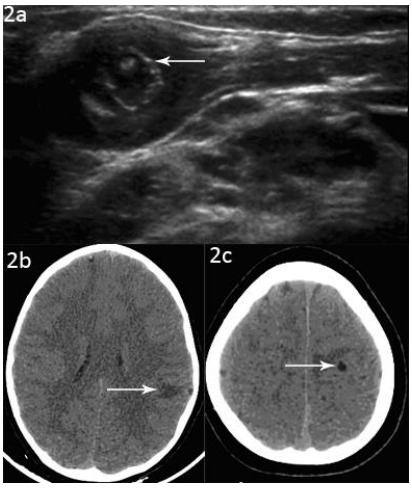

Fig-2: A) USG of Right SCM showing hypoechoic cyst with hyperechoic scolex within the Muscle; B & C) CT Axial plain Brain showing granulomas in the right frontal with scolex (Vesicular) and left parietal region with perilesional oedema

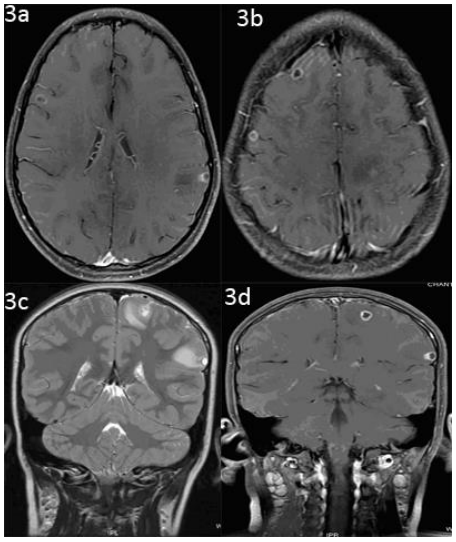

Fig-3:Cemri Brain showing granulomas in the bilateral frontal with scolex and left parietal region with perilesional oedema

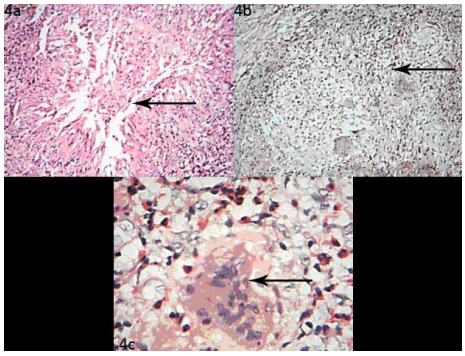

Fig-4: Stellate abscess(arrow), non-caseating granuloma, Foriegn body type of multinucleated giant cell

DISCUSSION

We describe a rare presentation of solitary muscular swelling of sternocleidomastoid (Myocysticercosis) of a common medical parasitic infestation of the brain (Neurocysticercosis) occurring concomitantly. Neurocysticercosis is the most prevalent infection of the central nervous system and is the greatest cause of acquired epilepsy worldwide [1].

Pork tapeworm infestation causes two different manifestations based on whether the humans are infected with adult tapeworms in the intestine called as Taeniasis or with larval forms in the tissues called as cysticercosis. The only definitive hosts for T. Solium are humans while pigs on the other hand are the usual intermediate hosts. Larval forms are harboured by Dogs, cats, and sheep. The resulting clinical disorder is named after the name of the larval stage, Cysticercosis Cellulosae.

Eighty six percent of the diagnosed cases are either ocular or cerebral. The remaining 14% are in the subcutaneous, cardiac, pulmonary, muscular, hepatic and oral locations [2]. Why they occur more in brain and muscles is not completely understood, but it may be related to increased blood supply in these tissues compared with other organs [3].

How cysticercosis presents depends on its location in the body, the number of lesions at a particular site and on the inflammatory response generated. In 87% cases it presents as a solitary lesion [4]. As the striated muscle cysts do not get favourable environment, they die early and can calcify after death. Inflammatory response is usually not generated by the living parasite. During the involution phase, a surrounding granulomatous inflammatory response comprising mainly of plasma cells, lymphocytes eosinophils and macrophages occur. In long standing cases the dead cyst is surrounded by a dense layer of fibrosis or calcification [5].

Muscles are involved most of the times along with involvement of central nervous system. Isolated muscular involvement by only one cyst is rare.Most muscular cysticercosis is asymptomatic and goes unnoticed for life of the patient [6]. Rarely, after death of worm in cyst or trauma to cyst there is release of

antigens from cyst which initiates immune reaction and inflammation around cyst, making it symptomatic[6]. Our patient was treated with surgical excision followed by cysticidal therapy.

Three different clinical manifestations of muscular cysticercosis are described, that includes the myalgic, myopathic type, the nodular or mass like type and the pseudo-hypertrophy type in which multilocular cyst formation occurs in a group of muscle.

During the death of the larva, there is leakage of fluid from the cyst and the consequent acute inflammation which result in myalgic type of cysticercosis. Our case showed features of myalgic type. Blood counts are not helpful except for the elevation of eosinophils which is occasionaly seen in some patients of cysticercosis. But raised eosinophils are only an indicator of helmenthic infestation.

Advent in the technology that ultrasonography has almost clinched the diagnosis of cysticercosis by its vivid appearence of sonolucent area with well defined anterior and posterior margins with central echodense curvilinear reflective strucutre within the cyst charecterised as scolex within the cyst, helped us to narrowdown the differential diagnosis to Cysticercosis as the causative agent.

MRI Brain charectrised the classical hypointense T1 and hyperintense T2 image with Fluid equivalent signal with perilesional edema with in absence of systemic features suggesting cysticercosis. Visualization of scolex confirms the diagnosis as in our case. Treatment depends on the site of infestation, number of cysts and presence of symptoms. Isolated myocysticercosis usually requires no treatment unless it is painful which requires excision though some recent case reports encourage conservative treatment with albendazole with good results [6].

Veerendra Kumar *et al* found 2.5 % of 81 patients showing concomitant involvement of Muscle in patients with Neurocysticercosis [7].

Verma *et al* described concomitant involvement of ocular muscle (LPS/SR complex) and brain manifesting as ptosis, restriction of elevation of the eye ball [8].

Bhalla *et al* described disseminated cysticercosis with extensive inolvement of multiple systems including muscle, brain, eyes, soft tissues [9].

Cysticercosis is a preventable disease. Preventive measures comprise of good personal hygiene including proper hand washing and sanitization, adequate washing and cleaning of vegetables and salads which are consumed raw, proper disposal of feces, treatment and prevention of human intestinal infections and proper cooking of pork to kill cysticerci.

CONCLUSION

Screening of the Central nervous system is necessary in patient presenting with solitary muscular pseudo tumor of uncertain etiology especially in tropical countries like India where cysticercosis is endemic . The blood picture may be misleading. The lesion can be certainly diagnosed noninvasively with ultrasound and MRI. The cyst can be completely treated non-surgically sometimes with combination of oral anti-helmenthic and steroid preparation.

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