CASE REPORT

Isolated Sternocleidomastoid Cysticercosis—Insights of Diagnosis and Treatment Planning: A Case Report

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Abstract

Introduction: Taeniasis is a condition when humans (definitive host) are infected with adult tapeworms in the intestine whereas cysticercosis is infection with larval forms (i.e., Cysticercus cellulosae).

Case description: We present a rare case of isolated sternocleidomastoid muscle cysticercosis which was diagnosed with help of USG and treated successfully by pharmacotherapy (albendazole and steroids).

Discussion: The cysticercous larva enters the circulatory system by penetrating and crossing the bowl wall. Through blood stream these larvae migrate to sites of lodgement which includes brain (most common), skeletal muscles, eyes, liver and subcutaneous tissues.

Conclusion: Isolated muscle involvement is not common and thus often presenting as isolated asymptomatic swelling, it poses challenges in diagnosis.

Keywords: Helminthic diseases, Myocysticercosis, Neurocysticercosis, Sternocleidomastoid, *Taenia saginata*.

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Introduction

Taeniasis is an intestinal infection mainly caused by three species of tapeworm: *Taenia solium* (pork tapeworm), *T. saginata* (beef tapeworm), and *T. asiatica*. *T. saginata* or *T. asiatica* has no severe clinical impact on human health, but *T. solium* can have adverse health outcomes. *T. solium* infection occurs when someone eats raw, undercooked, and infected pork. *T. solium* eggs may also infect individuals if they are ingested by a person (while ingesting contaminated food or water), causing infection with the larval parasite in the tissues (cysticercosis).[1] *T. solium* is considered a leading cause of death from foodborne diseases, and it almost results in a total of 2.8 million disability-adjusted life years. Commonly infected sites in the human body are the central nervous system (CNS), orbits, subcutaneous tissues, skeletal muscle, and important visceral organs like the liver, heart, and lungs.[2,3] Mostly muscular cysts occur concurrent CNS involvement (neurocysticercosis).[4] Isolated skeletal muscle involvement is rare, more so when it involves neck muscles. Thus we present this rare case of isolated myocysticercosis of the SCM in an adult female patient.

Case Description

A 22-year-old female patient presented in the ENT outpatient department with complaints of insidious onset and gradually progressive painless swelling in the right side of the neck for the past 1 year. She did not have any other associated symptoms. On clinical evaluation, a single 1.5 × 1 cm firm, nontender, and nonmobile swelling with ill-defined margins was palpated in the right SCM (Fig. 1). It was free from the skin surface, and the overlying skin was normal. The rest of the ENT examination revealed no abnormality. The blood counts of the patient were within normal limits. The patient was then subjected to a USG assessment of the neck, which showed a well-defined anechoic cystic lesion with an echogenic nodule in the right SCM without significant vascularity (Fig. 2), and the lesion was diagnosed as myocysticercosis. The diagnosis was further confirmed with fine-needle aspiration cytology (FNAC). To rule out concurrent CNS involvement patient, a neurological assessment of the patient was also done. The neurologist reported no abnormality in the assessment. However, it was decided to do an magnetic resonance imaging (MRI) scan of the brain, orbit, and neck to look for any other lesions. This also reported no other lesion besides the one in SCM. The lesion in SCM was described as a well-defined, thin-walled unilocular cystic lesion of CSF intensity, having a small T2 weighted image hypointense mural nodule in the belly of the right SCM muscle at the level of C5-6 intervertebral disk (Fig. 3). The lesion displayed minimum enhancement of the wall and the nodule and was surrounded by mild perifocal edema in the adjacent muscle. Thus, the final diagnosis of isolated SCM myocysticercosis was made, and the patient started on treatment with the tablet albendazole. The initial phase of treatment was covered with oral steroids to prevent

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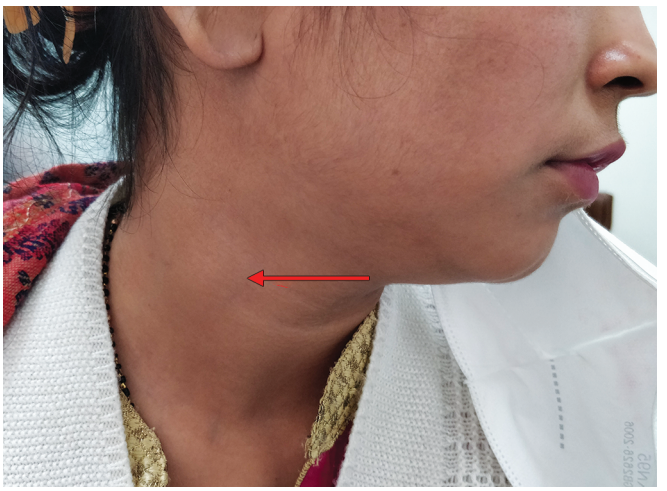

Fig. 1: Clinical image showing swelling seen in right SCM (marked by arrow)

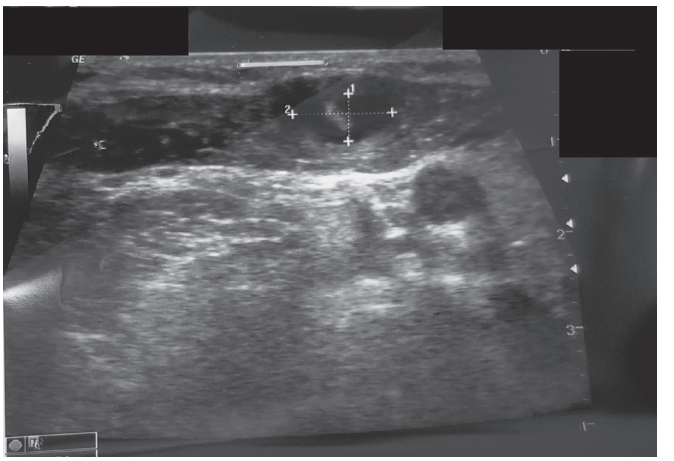

Fig. 2: USG appearance showing intramuscular cystic lesion with an eccentric nodule in the right SCM

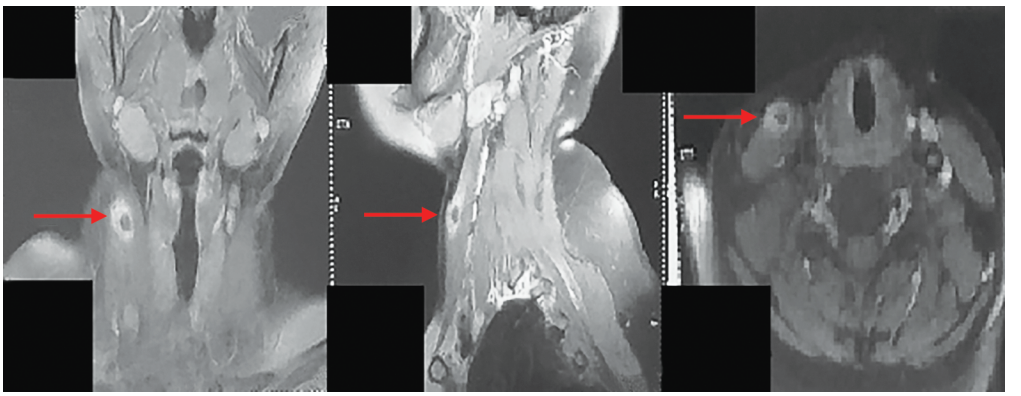

Fig. 3: MRI neck showing swelling in SCM in coronal, sagittal, and axial planes

the inflammatory response which might occur around the dying cysticerci. The patient tolerated the treatment well and eventually got symptom free with 1 month of treatment.

Discussion

Human cysticercosis occurs when humans (definitive host) get infested with the larval stage of the pork tapeworm, *T. solium* (i.e., cysticercus cellulosae).[5,6] This is prevalent all over the world, wherever sanitation and standards of living are poor. The life cycle of the worm starts in the definitive host (human) when the latter consumes the eatables contaminated with worm eggs. The food sources for the infection can be both vegetarian and nonvegetarian. Another interesting form of autoinfection is also known where the eggs released in the intestine by adult worms regurgitate in the stomach, hatch with the help of gastric acid, and embryos are released. The cysticercus larva, thus released, enters the circulatory system by penetrating and crossing the bowel wall. Through bloodstream, these larvae migrate to sites of lodgment, which include the brain (most common), skeletal muscles, eyes, liver, and subcutaneous tissues.[6]

Clinically in the majority of cases, cysticercosis remains asymptomatic if it involves muscles. Even when the cyst remains viable for up to a decade or more, it does not produce many symptoms except a localized swelling of the involved muscle.[2,5] The problem arises when the host immune system builds up a strong immune response against the degenerating cysts, and thus, individuals suffer a variety of symptoms depending on the site of involvement. This is also not very common as, in the majority of cases, the cysts either calcify or resolve completely following their natural course.[6,7]

Since the involvement of isolated skeletal muscle is rare, it can present a diagnostic dilemma to clinicians as the only symptomatology is a painless swelling in most cases. Even though FNAC was earlier considered a very reliable confirmatory diagnostic tool for soft tissue cysticercosis,[6] it is not favored by many these days due to two main reasons, that is; first of all, there is an inherent risk (not very high) of initiating the host immune response against cysticerci and secondly, there are advancements in diagnostic accuracy of noninvasive tools like USG.[6] Computed tomography (CT) and MRI can also be utilized effectively in diagnosing these soft tissue involvement by cysticerci but are not favored due to being expensive and more time-consuming. Researchers have studied the efficacy of diagnostic accuracy between CT and USG in identifying cysts and scolex and found it comparable.[8] When USG is used for diagnosing, these lesions' various appearances have been described in the literature, which includes; cyst with uneven distribution of fluid within it, cyst with inflammatory mass surrounding it, cyst with eccentrically placed scolex and fluid in adjoining muscles fibers, and cyst with calcification changes.[7,9]

The isolated muscular cysticercosis can be treated by pharmacotherapy or by surgical excision. The surgery being reserved for cases where USG shows abscess formation in and around the cyst. Most of the asymptomatic muscular cysticercosis swellings can be treated with antihelminthic drugs (i.e., albendazole and praziquantel) given for longer durations, like 4 weeks. Combining steroids in treatment has also been proven effective in preventing undesired side effects (nausea, vomiting, fever, and headache) arising after the mass destruction of cysticerci with usage of antihelminthic drugs.[10,11]

Conclusion

Helminthic infections are still not very uncommon in India. CNS involvement by *T. Solium* is common and can have a poor prognosis. Myocysticercosis is another form of disease manifestation, which can occur in association with neurocysticercosis or, at times, as only manifestation. Involvement of neck muscles is not very common but has been reported in a few case reports worldwide. So while dealing with neck swelling (especially when either intramuscular), ENT surgeons should also keep the possibility of the disease. Fortunately, the problem can be diagnosed reliably by USG and requires only medical therapy for treatment, with antihelminthics and steroid cover (for the initial phase). The prognosis is very good.

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