

# Cysticercosis of Sternocleidomastoid Muscle Presenting as Neck Swelling – A Case Report



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## ABSTRACT

Cysticercosis is an infection caused by *Taenia Solium* whose larval stage (cysticerci) can affect various human tissues. In this study, we present the case of a 32-year-old male who presented with a neck swelling of 2 months duration. High resolution ultrasonography of neck showed features suggestive of cysticercosis of sternocleidomastoid muscle. He was managed conservatively with oral albendazole 400 mg twice daily for 4 weeks. Review of the patient after 4 weeks showed complete resolution of the swelling and a repetitive ultrasonography did not show any evidence of cysticercosis. Although a rare entity and isolated cysticercosis of skeletal muscle should come into consideration among the differential diagnoses of head and neck swellings.

## Introduction

Cysticercosis is an infection with the larval stage (cysticerci) of *Taenia Solium*. It is seen as cysts in various human tissues, commonly in the brain and orbit. In humans, the cyst commonly occurs in central nervous system, eye, striated muscles, subcutaneous tissue and rarely other tissues [1]. Most of the cases involving skeletal muscles also have multiple cysts as well as central nervous system involvement [2]. Isolated muscle involvement is rare [3]. We present a case of isolated cysticercosis of the sternocleidomastoid

muscle, masquerading as thyroid swelling, which was diagnosed by high resolution ultrasound and successfully treated non-operatively with oral anthelmintic medication.

## Case Presentation

A 32-year-old male presented to the Department of ENT and Head and Neck surgery with swelling over the right side of neck of two months duration. The swelling was painless and there was no increase in size of swelling since onset. There was no history of pain in throat, difficulty in swallowing, nasal obstruction, epistaxis, fever and headache. There was no history of

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similar complaints in the past. There was no history of contact with tuberculosis. He was on strict vegetarian diet.

Clinical examination showed a single swelling over right lateral lower third of neck, about 3x2 centimetres in size, non tender, with well defined margins, hard in consistency and mobile horizontally but not vertically (Fig. 1). There was no skin fixity or any skin changes over the swelling. On contraction of the sternocleidomastoid muscle, size of swelling remained same but mobility was restricted.

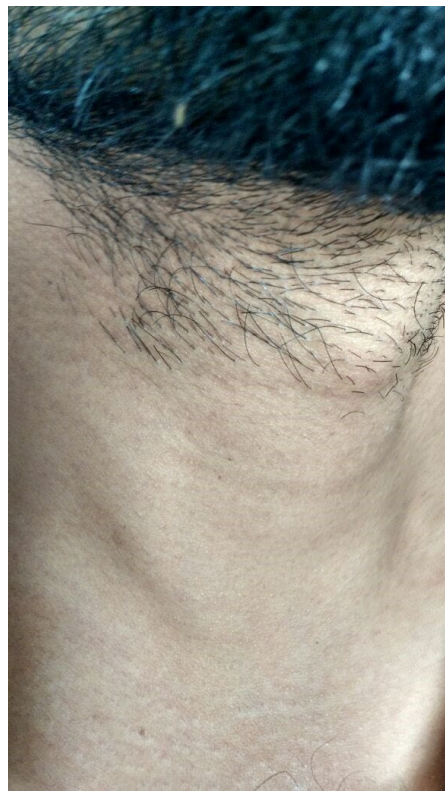
Examination of ear, nose and throat was normal. Videolaryngoscopy was within normal limits. High resolution ultrasonography of neck showed an oval shaped thick-walled intramuscular lesion with central cystic area containing irregular echogenic/thread like materials. These findings were suggestive of cysticercosis in sternocleidomastoid muscle (Fig. 2 and 3). X-Ray chest was normal. Blood investigation revealed eosinophilia. Absolute eosinophil count was raised. Hence, a diagnosis of cysticercosis of the left sternocleidomastoid muscle was made.

Ophthalmic evaluation did not reveal any evidence of cysticercosis in the anterior chamber, vitreous or

retina. Magnetic resonance imaging (MRI) brain was done to rule out neurocysticercosis. Fine needle aspiration was not performed to avoid the incidence of hypersensitivity due to leakage of cyst fluid into bloodstream. The patient was given oral albendazole 400 mg twice a day for 4 weeks. The patient was reviewed after 4 weeks. The neck swelling had disappeared on review and a repetitive ultrasonogram of the neck was also done which showed no evidence of cysticercosis (Fig. 4).

## Discussion

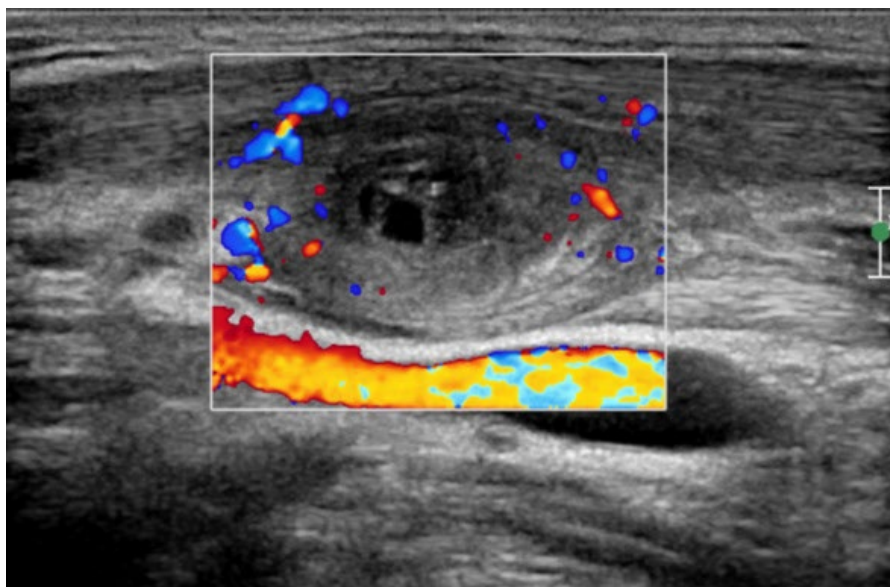
Taenia Solium, the pork tapeworm causes two distinct forms of infection. The form of disease that develops, depends on whether humans are infected with larval forms in the tissues (cysticercosis) or with adult tapeworms in the intestine (taeniasis). Taenia Solium has a complex life cycle consisting of two hosts. Human beings are the only definitive host and harbour the adult tapeworm [4]. Both humans and pigs can act as intermediate hosts. They can harbour the larvae or cysticerci. Cysticercosis results from the ingestion of tapeworm eggs through contaminated food and water or dirty hands or eating undercooked meat (pork). Our patient, being a strict vegetarian, probably would have contracted the disease by eating



**Fig. 1.** Single swelling over right lateral lower third of neck, (3x2 cm) with well defined margins



**Fig. 2.** Ultrasound images showing a thick-walled oval intramuscular lesion with central cystic area containing irregular echogenic/thread like materials suggestive of cysticercosis in sternocleidomastoid muscle.

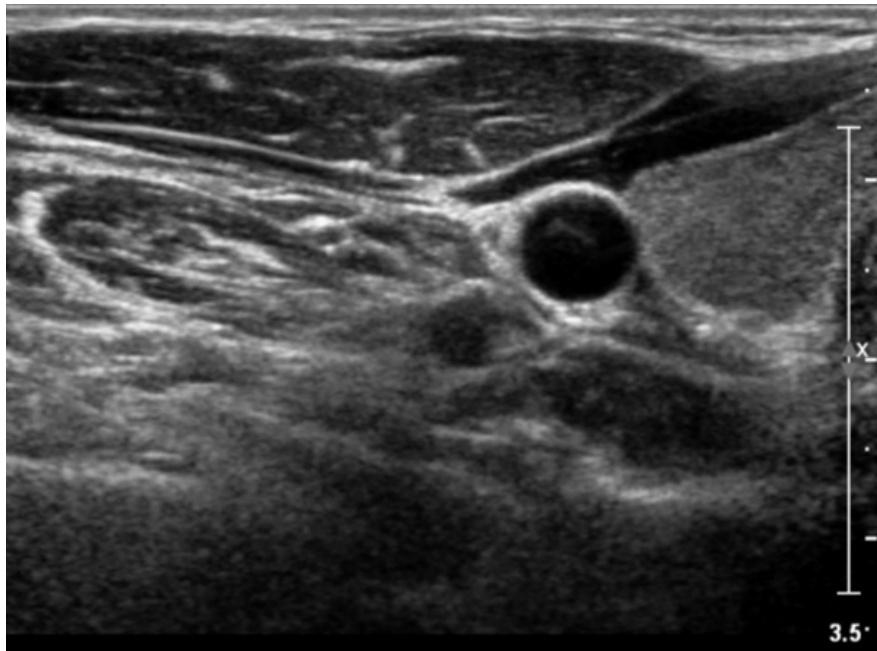


**Fig. 3.** Ultrasound images showing a thick-walled oval intramuscular lesion with central cystic area containing irregular echogenic/thread like materials suggestive of cysticercosis in sternocleidomastoid muscle.

fresh vegetable salads which may not have been properly washed. Most of these cases are reported from developing countries where the standard of health and hygiene is poor [5].

The most common location of cysticercosis is brain, eye, subcutaneous tissue and muscles. Other less common locations include heart, liver, lung and

peritoneum [5]. Among the muscular cysticercosis, skeletal muscles are most commonly involved [5]. Head and neck (excluding orbit and brain) is generally a less common location for cysticercosis. Cysticercosis of tongue [6], floor of mouth [6], temporalis [6], masseter [7], lower lip [8], soft palate [8], biceps brachii muscle [9] and sternocleidomastoid [10] muscle has been reported in literature. Majority of



**Fig. 4.** Post treatment ultrasonogram showing a complete clearance of cystercotic lesion in sternocleidomastoid muscle

the cases report muscular cysticercosis presenting as a painless swelling, similar to our case. But it can also present as a painful swelling due to myositis in active stage.

High resolution sonography is considered best for diagnosing cysticercosis [10, 11] and can be used liberally, as we did in our case. Ultrasonography is a non-invasive, non-ionizing and sensitive modality for diagnosing cysticercosis. Four sonographic patterns of muscular cysticercosis have been described [6]. The first type is cysticercus cyst with an inflammatory mass around it, caused by the death of the larva. The second type is an irregular cyst with very minimal fluid on one side, indicating a leakage of fluid. The third appearance is a large irregular collection of exudative fluid within the muscle with the typical cysticercus cyst containing the scolex and situated eccentrically within the collection. The fourth sonographic appearance is that of calcified cysticercosis.

Living cysticerci actively evades immune recognition and does not cause inflammation, but death of larva or leakage of fluid from cyst may trigger an acute inflammatory response. Therefore, fine needle aspiration cytology (FNAC) is not suggested. But there are case reports of muscular cysticercosis diagnosed with FNAC [6]. Computed tomography (CT) and ultrasonography (USG) are equally effective in identifying the cyst and scolex [12].

Every case of head and neck cysticercosis should be

investigated to determine the involvement of multiple sites, as there is high incidence of multilocularity. Hence, we did an MRI brain and ophthalmology evaluation to rule out the same. There are case reports of extensive disseminated cysticercosis also [13].

Praziquantel (50 mg/kg/day) and albendazole (15 mg/kg/day) are drugs of choice in treating cysticercosis [14] and the duration of treatment must be 4 weeks [10]. Both drugs are similar in efficacy. Our patient was treated conservatively with albendazole for 4 weeks. The side effects like fever, headache, nausea, vomiting and dizziness are reported with these medications possibly due to inflammatory reaction produced by the host in response to destruction of cysticerci, but our patient did not experience any. Albendazole acts by inhibiting microtubule formation. The loss of cytoplasmic microtubules blocks glucose uptake in the larval and adult stages of the parasites, thereby depletes their energy reserves and causes death [9]. A high dose of dexamethasone is also suggested to prevent deleterious host inflammatory response.

Serial ultrasonography is a useful tool in following up the sequence of therapeutic response [12]. Serial USG done in our case showed complete regression of swelling. Surgery does not have much role in muscular cysticercosis as most lesions heal by medical treatment. Cysticercosis of eyes and neurocysticercosis may require surgery. Our patient

was hence managed conservatively. But there are case reports of muscular cysticercosis managed by surgical excision of the lesion [5].

Cysticercosis is a preventable disease and the prevention involves breaking the life cycle of *Taenia Solium* by maintaining good personal hygiene, effective faecal disposal and adequately treating patients with taeniasis [15].

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