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Case Report

Cysticercosis of Masseter Muscle: A Diagnostic Dilemma

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I N F O

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A B S T R A C T

The masseter muscle cysticercosis is a rare soft tissue entity. Among so many causes of swelling of face this entity is very rare and making diagnosis difficult. Infestation of larvae of *Taenia solium* (tapeworm) causes cysticercosis in humans. Here, we have reported a case of cysticecosis inside masseter muscle, presenting with recurrent painful swelling of face. Diagnosis was confirmed after high resolution ultrasonography (HRUSG) and magnetic resonance imaging (MRI) and it was managed conservatively.

Keywords: Cysticercosis, HRUSG, Masseter Muscle, Taeniasolium

Introduction

Parasitic infestation by the larvae named *Cysticercus cellulosae*, of the *Taenia solium* is responsible for cysticercosis in humans.[1] Unhygeinic conditions and animal rearing in developing countries are two major factors for more common occurrence of this disease.[2]Although larvae encystment may occur in any part of the body but in masseter it is very rare. Most common body part for larval encystment is Central Nervous System (CNS) followed by subcutaneous tissues, muscles and other tissues. Intramuscular encystment of cysticercosis presents with either nodule or pseudohypertrophy of muscles.[3] This case is important because its knowledge will improve early diagnosis and management. This is also unique because patient visited to many other hospitals but could not be diagnosed.

Case Presentation

A 34 years old male presented to Department of Oral and Maxillofacial Surgery with chief complaint of recurrent nodular swelling on left side of the face along with difficulty in opening of the mouth since one year. On taking antibiotics and analgesics swelling got reduced but reappeared after few days. Personal history revealed that patient was vegetarian, tobacco chewer and smoker.

On extra-oral inspection, a swelling over zygomatic region was seen measuring approximately 3x2 cm in diameter, extending 2cm anterior to tragus region, 4 cm posterior to ala of nose anterio-posteriorly, 2 cm below the lower eye lid

and 4cms above the lower border of mandible[Figure-1(A)].

Figure 1(A).Patient's image showing swelling on left side of face

Figure 1(B).Post treatment image of patient

On extra-oral palpation, swelling was firm, non-tender and without any lymphadenopathy. Intraoral inspection and palpation was non contributory. All systemic examinations were within normal limits.

All investigations were within normal range. HRUSG revealed a cystic lesion measuring 12x11 mm over left maxilla with surrounding soft tissue inflammation. An eccentric echogenic nodule was also noted in the cyst measuring 03x02 mm suggestive of scolex [Figure-2(A) and 2(B)].

Figure 2(A).HRUSG showing eccentric echogenic nodule

Figure 2(B).HRUSG showing cystic lesion over left maxilla with surrounding soft tissue inflammation

Axial T2 weighted MRI of face revealed a unilocular cystic lesion with surrounding edema in anterior part of left masseter muscle [Figure-3(A)].

Coronal post contrast MRI showed a myocysticercus lesion in left masseter muscle with extensive enhancement of the adjacent muscle fibres suggestive of myositis [Figure-3(B)].

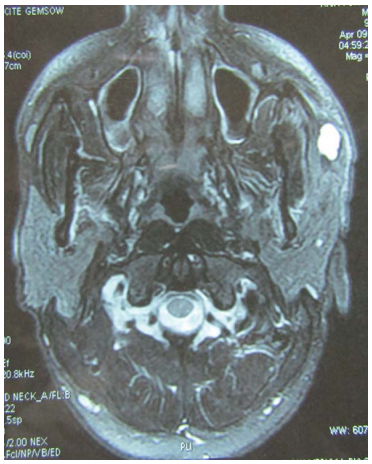

Figure 3(A).Axial T2 weighted MRI of face showing unilocular cystic lesion with surrounding edema in anterior part of left masseter muscle

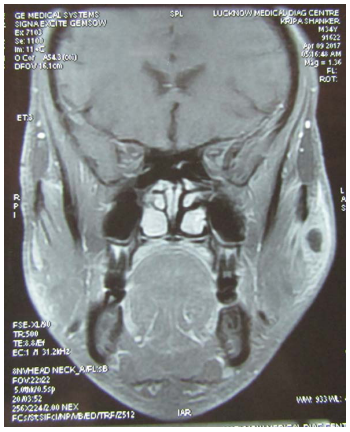

Figure 3(B).Coronal post contrast MRI showing myocysticercus lesion in left masseter muscle

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Patient was given Albendazole 400 mg twice a day for 14 days along with dexamethasone 10 mg twice a day with tapering of the dose for next 14 days. Patient improved with this conservatively management. Swelling resolved after 21 days and he became asymptomatic [Figure-1(B)]. No recurrence was seen after follow-up of 13 months.

Discussion

Cysticercosis is infestation by larvae of the *Taenia solium* that may involve any body part. Central nervous system (neurocysticercosis) followed by subcutaneous tissues, eye, skeletal muscle, heart, lungs, liver and kidney are the common sites of occurrence.[4] Oral cysticercosis is rarely reported in literatures and making its precise clinical diagnosis is very difficult.[5] Among oral forms tongue involves 42.15%, lips 26.15% and oral mucosa 18.9% cases.[6] Masseter muscle involvement is extremely rare entity. Reddy et al.,[7] Mittal et al.[8] have also reported similar cases of intramuscular cysticercosis in masseter muscle, which was diagnosed by ultrasonography and treated conservatively. Adult tapeworms and its larva both infect humans separately. Adult form infects the intestine while the larval form infects the tissues (cysticercosis).[9] Humans are the definitive hosts for *Taenia solium* which infects small intestine after ingestion of raw pork or improperly cooked infected pork. Infected humans excrete eggs of the tapeworm in faeces and it is ingested by the pig, which is the intermediate host. In the small intestine the egg hatches to release oncospheres which enters the blood stream by penetrating intestinal mucosa.[8] It reaches into different type of tissues via blood flow where it gets encysted and forms cysticercosis. Here the life cycle of *Taenia solium* gets completed. By chance, humans may be intermediate host of *Taenia solium.* The organism is transmitted to humans by ingestion of eggs of *Taenia solium* from contaminated water and food. Reverse peristalsis may also cause internal regurgitation of these eggs into the stomach if human is already infected with tapeworm. Localisation of cysticercosis and its total number makes the basis of different types of clinical presentations in humans. Neurocysticercosis (NCC) presents with seizure, hydrocephalus and signs of raised intracranial tension.[9] Three varied forms of clinical manifestation of muscular cysticercosis is defined: the myalgic type; the mass-like, abscess-like type or pseudotumour; and the pseudohypertrophic type. Fluid leakage that occurs after death of larva causes acute inflammation and hence resulting in local pain and myalgia. Mass-like type, abscess-like type or the pseudotumour type form of cysticercosis is due to degeneration of cyst wall causing leakage of fluid and chronic inflammatory reactions with peripheral collection of fluid.[8] There are at least four different ultrasonographic findings of myocysticercosis. First one is the cysticercus cyst with an inflammatory mass at periphery which results after the death of the larva, second is the irregular cyst because of minimal fluid collection on one side due to cystic fluid leakage. The third ultrasonographic appearance is eccentrically situated scolex with large irregular collection of fluid within the muscle, which may be due to chronic intermittent leakage of fluid looking similar to muscular abscess. Presence of the cysticercus cyst within it confirms the diagnosis. The fourth appearance is multiple elliptical calcifications in soft tissues looking like millet seeds.[8] Differential diagnosis of cysticercosis of the masseter includes inflammation of the parotid gland, obstruction of parotid gland, tumour of accessory parotid gland, pre-auricular lymphadenopathy, tumours of masseter muscle, intramuscular lipomas, sarcoidosis, and solitary neurogenic tumours such (neurilemmoma, neurofibroma) and haemangioma or lymphangioma.[7] Site and extent of lesion gives the way of treatment. It may be surgical excision or medical treatment. Surgical excision done in localized lesions while medical treatment with albendazole or praziquantel has been recommended for neurocysticercosis and subcutaneous cysticercosis where excision is not possible.[10]

Key Messages

- Myocysticercosis should be included in differential diagnosis of swellings of facial region.
- Preventive measures like proper pork cooking, proper washing of vegetables and clean water are important.
- High-resolution ultrasonography being non-invasive and non-ionizing, plays very important role in diagnosis of cysticercosis with great confidence, no further investigation is required.

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Conflicts of Interest: None

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