

Masseteric Cysticercosis: A Rarefied Presentation in Maxillofacial Region

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Abstract:

Cysticercosis or Pork tapeworm infection is a parasitic infection caused by the larval cyst of the pork tapeworm (*cysticercus cellulosae*). The disease remains inexorable until it evokes a foreign-body reaction. The infection is very commonly seen in central nervous system (CNS) but involvement of eye, subcutaneous tissue, muscles, heart, lungs, liver and kidney has also been documented in literature. We present a unlikely representation of cysticercosis in the maxillofacial region of a male patient aged 56 years who presented with a swelling associated with reduced mouth opening. The diagnosis was confirmed by MRI and managed conservatively.

Keywords: masseter muscle, cysticercosis, taenia solium, albendazole

Introduction

Cysticercosis, an helminthic infection is caused by larva (*cysticercus cellulosae*) of taenia solium (pork tape worm) ¹. The larva may enter into the body (human intestine) by consuming contaminated food (mainly pork meat) and water. The larva then can migrate from intestine to brain, muscle, eyes, lungs, heart, liver, peritoneum and oropharyngeal regions.^{2,3} The disease may remain asymptomatic for years and gets detected by seizures, painful nodules or swelling³.

Case Report

A 56-year aged old male reported to the Department of Oral & Maxillofacial Surgery, People Dental Academy, Bhopal with a chief complain of swelling in front of right ear from past 2-3 month with reduced mouth opening since 15 to 20 day (Fig 1,2).



Figure 1: Extra oral picture with an arrow pointing at the site of swelling in right preauricular region



Figure 2: Interincisal mouth opening

The patient noted that on taking antibiotics, size of the swelling got reduced and his mouth opening also got increased. No history of trauma was present. Patient observed occasional rise in body temperature when the swelling size increases.

Patient consumed a pure vegetarian diet and was nonsmoker and do not consume alcohol. On general examination, he was conscious and oriented well to time and place. A slight increase in temperature was noted.

Facial asymmetry was noted due to diffuse swelling in right preauricular region of face. On palpation the swelling was mildly tender, firm and non-fluctuant measuring 5 cm superior-inferiorly and 4.0 cm anterior-posteriorly. Single right submandibular lymph node was palpable which was firm in consistency, tender and was freely movable on both directions.

Intraoral examination revealed few teeth present i.e 13,14,15,34,35,36,45 and 46 but without any carious lesion or periodontal pathology. Orifice of stenson's duct appeared to be normal but salivary flow from right stenson's duct was found to be reduced as compared to left side. A provisional diagnosis of inflammatory lesion of parotid gland was made. Differential diagnosis included primary or metastatic tumours of parotid gland or masseter muscle, fibroma, cysticercosis, intramuscular hemangioma and intramuscular lipoma.⁴

The orthopantomograph (OPG) was unremarkable and the patient was referred for ultrasonography (USG). USG on a GE Logiq E9 PRO machine using a high frequency linear transducer probe revealed an ill-defined heteroechoic lesion with hypoechoic center measuring 2.8 x1.7 mm present adjacent to right masseter region. Right Parotid gland appeared normal. Based upon interpretation of USG, a diagnosis of inflammatory or resolving abscess of masseter muscle was concluded.

The patient was then sent for MRI face which revealed well defined intra muscular cystic lesion of 16x6 mm in the deep intramuscular part of right masseter space with hypertense muscle. Intra cystic tiny eccentric hypointense nidus with contrast study revealing wall enhancement suggestive of intramuscular cysticercosis of right masseter muscle.

The patient was treated conservatively with Albendazole 200mg (Zentel) two times a day for one month. ⁴Patient was recalled after one month and there was complete resolution of patient swelling and trismus. A follow-up USG was done to confirm the resolution of the infection which confirmed that infection was cured completely.



Figure 3: USG showing a heteroechoic lesion with hypoechoic center

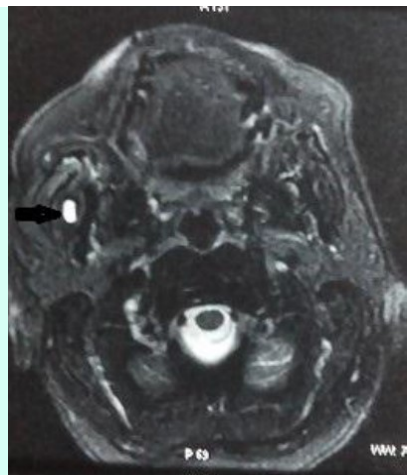


Figure 4: MRI showing intra cystic tiny eccentric hypointense nidus



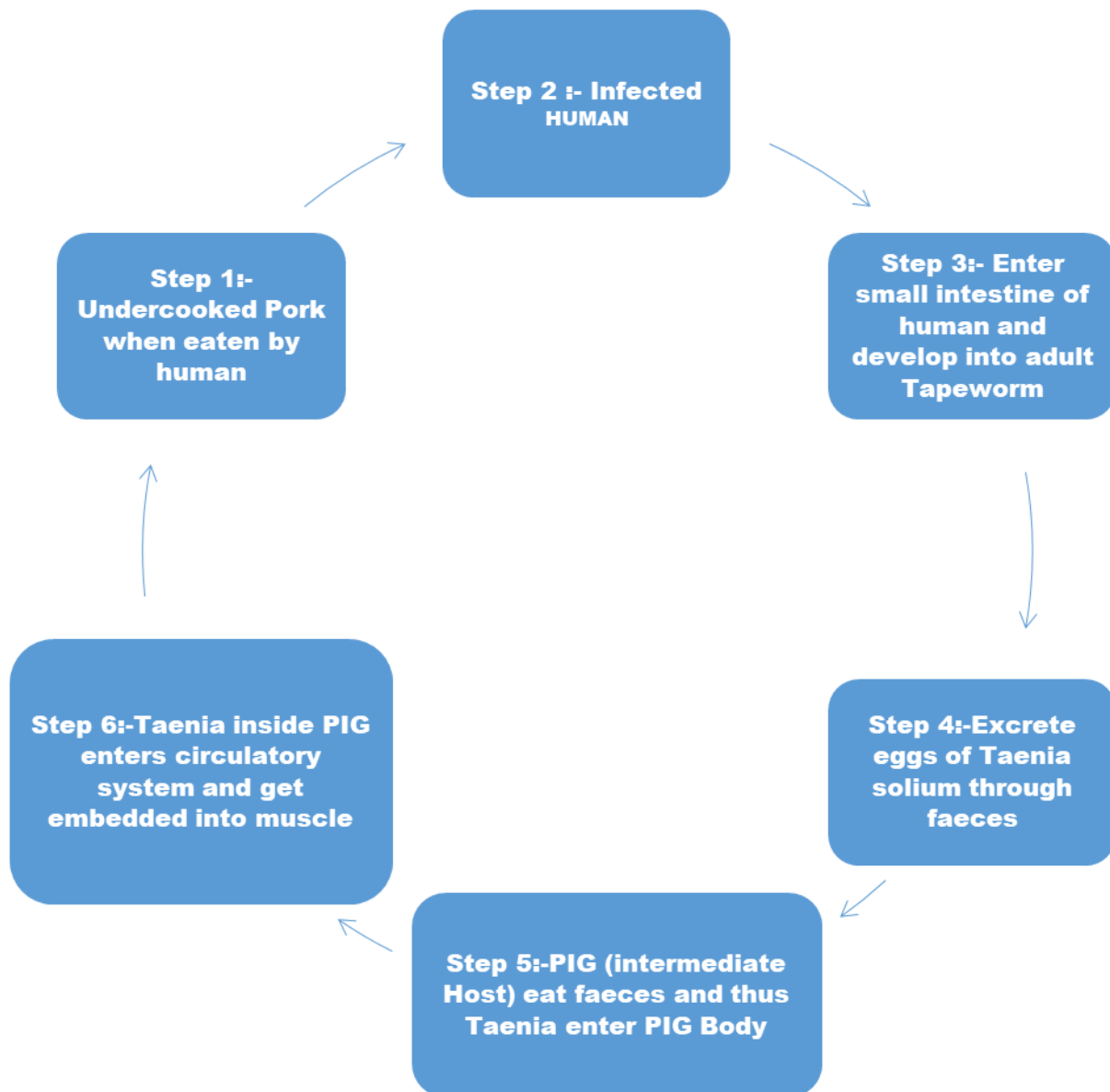
Figure 5: Follow up after 3 months

Discussion

Cysticercosis is a parasitic infestation gifted to humans by the larva of the pork tape worm (*Taenia Solium*), *cysticercus cellulosae*.¹ WHO in 2009 presented a report mentioning around 50 million people to be infected with cysticercosis. The disease is found to be endemic in the regions where pork is consumed more like Latin America, Bhutan, India, Nepal, Thailand, Cambodia, China, New Guinea, Vietnam, and various other parts of South East Asian region, western pacific region, non-Muslim populations of Africa, and other European countries.⁴ The disease is eradicable as declared by International Task Force for Disease Eradication in 1993 but it still remains a neglected disease and then in 2010, World Health Organization (WHO) placed it to the list of major neglected tropical diseases.⁵

Life Cycle of Taenia solium:

The life cycle of T. solium is mentioned in following schematic diagram. ⁶



Step 1. Humans can acquire the infection by ingestion of undercooked pork contaminated by taenia Solium eggs.

Step 2, 3. Cysticerci enter the human body and reaches to the small intestine where it get adequate environment to develop into their adult tapeworm (around 2 months). Adult form has hooked scolices by the help of which it attaches itself to the intestinal wall where they can persist for years.

Step 4. Infected humans (definitive host) excrete the eggs in the feces, passing the parasite from the gastrointestinal tract into the environment. Taenia solium is able to remain viable in the environment from days to months.

Step 5. Pigs (intermediate host) acquire infection by consuming the contaminated feces of infected human.

Step 6. After entering the body of pig the egg migrates to the intestine of pig and transform into oncosphere which break the intestinal wall and enters to circulatory system and get embedded in the muscles of the pig developing into cysticerci (the infective form of T. solium). Cysticerci is capable to persist in the muscle for several years.⁶

Clinical Features

The clinical picture of the disease depends on the number and location of cysticerci along with inflammatory response or scarring provoked by the organism. The organism invariably invades the CNS, but involvement of eye, subcutaneous tissue ,muscles, heart, lungs, liver and kidney has also been documented in literature.⁷

When the cysticerci invades the CNS it is termed as Neurocysticercosis which may presents as seizure/epilepsy⁷, hydrocephalus,⁷ headache,⁷ chronic meningitis⁷, focal neurological deficits, psychological disorders, and dementia.⁸

The organism when attack into the muscle, it may show three distinctive features as *myalgia*; the mass-like, *pseudotumour or abscess-like*; and the rare *pseudohypertrophic*. The death of the larva causes the leakage of fluid evoking acute inflammation resulting in local pain and myalgia. Pseudotumour type or the abscess form may be seen when the inflammatory fluid start collecting around the died larva causing mass like lesion. In pseudohypertrophic form the cysticerci retracts, its capsule thickens and the scolex calcifies.²

Imaging

In Ultrasonography, diagnostic feature is that of the cysticercus itself, which is viewed as an oval or round well-defined cystic lesion with an eccentric echogenic scolex in it. ^{7,9}

MRI shows radiopaque centric lesion with peripheral enhancement of rim where the radiopaque centre is due to calcified cysticerci which is oriented parallel to muscle fibre.⁴

Management

Medical management is done with anti-helminthic drugs like albendazole 10-15mg/kg body weight for one month and Praziquantel is given at 75 mg/kg/day for 15 days. ⁶Adjuvant corticosteroids (dexamethasone 0.1 mg/kg/day) may also be advised to reduces inflammation caused by degeneration of cysticerci by anthelminthic treatment.¹⁰ Surgical interventions is required when the lesion gets localized and show symptoms. Prognosis of head and neck cysticercosis is magnificent without any relapse, in contrast to lesion involving brain, eyes and other sites.⁴

Prevention

Adequate sanitation, good personal hygiene and cleanliness, thorough and complete cooking of pork and all vegetables are the measures to prevent the disease.⁷

Conclusion

Cysticercosis should always be considered as one of the differential diagnosis of maxillofacial swellings. Although clinical features may not be pathognomonic but USG and MRI imaging play an important role in its diagnosis and by histopathology the diagnosis can be confirmed. Patient can be managed conservatively by anti-helminthic drugs and surgery is rarely needed for symptomatic localized lesions.

Conflict of Interest

There are no financial or other relations that could lead to a conflict of interests.

Consent

Informed written consent was obtained from the patient.

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