

CASE REPORT

Taenia Solium: A Rare Expression in Oral Cavity

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Abstract Cysticercosis is a helminthic infection caused by the larval stage of pork tapeworm, *Taenia solium*. The worm requires different hosts during its different stages of development. Humans are the definitive hosts and harbor the adult worms, while pigs harbor the larval stage and act as the intermediate hosts. This disease is endemic in developing countries of the world where poor sanitary conditions are prevalent. It manifests mostly in form of lesions in the subcutaneous tissues, brain and skeletal muscles. It is interesting to note that the oral cavity is a rare site for its occurrence and pose as a diagnostic challenge for the clinicians. Here, we report one such rare case of an isolated lesion of the oral cavity involving the buccinator muscle.

Keywords Cysticercosis · Pork tapeworm · Feco-oral route · Buccinator muscle

Cysticercosis is a common helminthic infection caused by the larval stage of pork tapeworm, *Taenia solium*. The larvae, also called as cysticercosis cellulose, reside within the muscles and other tissues of pigs that act as their intermediate hosts [1]. These are transmitted to humans through feco-oral route by ingestion of improperly cooked pork or by drinking water contaminated with the eggs of *T. solium*. This condition is predominant in the lower socioeconomic communities particularly in countries of Latin America, Asia and Africa [2].

After ingestion, the eggs are transmitted to the human intestine from where the larvae migrate to other areas such as brain, liver, heart, eyes and muscles [3]. However, this condition very rarely involves the oral cavity. We report one such rare case of cysticercosis of the oral cavity involving the buccinator muscle.

Case Report

A 24-year-old female reported to our OPD with the complaint of a painful nodule in right cheek since a few days (Fig. 1). On examination, a solitary nodule was palpable in the right cheek. The nodule was mobile, tender and firm on palpation and had well-defined borders. However, the buccal mucosa appeared relatively normal on inspection (Fig. 2). Clinical examination gave an impression of an infected solid to cystic lesion present within the right buccal mucosa with the more common differentials like mucocele, fibroma, neurofibroma, epidermal cyst etc. being considered. The patient did not report to have any significant medical history. Routine blood investigations were done. FNAC was performed which was negative for malignancy. Looking at the clinically benign appearance of the lesion along with a negative FNAC report, an excisional biopsy of the lesion was planned under local anesthesia. After administering local infiltration (2% lignocaine with adrenaline), an incision was given over the prominence of the swelling intraorally. For cosmetic reasons, an intraoral approach was followed for the excisional biopsy even though the swelling presented extraorally (Fig. 3). Dissection was done all around the lesion in order to free it from the adjacent muscular attachments. Intraoperatively, a well-defined capsule could not be distinguished; therefore, a margin with minimal muscular tissue was included. The

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Fig. 1 Clinical presentation of patient with mild swelling in right cheek

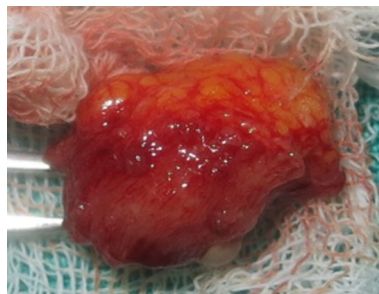


Fig. 4 Excised specimen



Fig. 2 Intraoral photograph showing clinically normal appearing buccal mucosa



Fig. 5 Closure of surgical site



Fig. 3 Surgical excision of the cyst from intraoral aspect

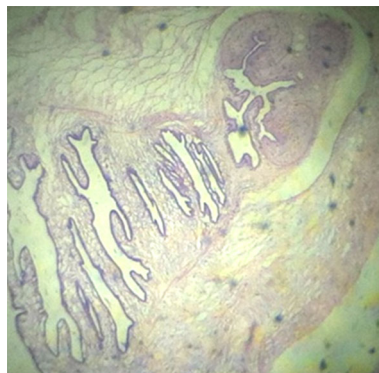


Fig. 6 Histopathological photograph showing the scolex of cysticercus

lesion was excised in toto (Fig. 4) and measured approximately 2 cm × 1 cm in dimension. Closure was achieved (Fig. 5). The specimen was then sent for histopathological examination.

Microscopic examination of the lesion showed a cystic lesion with scolex of cysticercus (Fig. 6). The muscle tissue was edematous, intensely inflamed and showed foci of hemorrhage, while the stroma showed a dense mononuclear cell infiltrate with many macrophages. These were

surrounded by a few microabscesses. An admixture of eosinophils were seen. Occasional multinucleate giant cells were seen. Cyst wall showed characteristic microvilli. All of these features were suggestive of cysticercus infestation with secondary inflammation.

There after a CT scan of brain was advised, which showed a normal study and ruled out the possible dissemination of the parasitic infestation in cerebral or retro-orbital tissues (Fig. 7). The patient was started on oral albendazole according to the recommended dose of 15 mg/

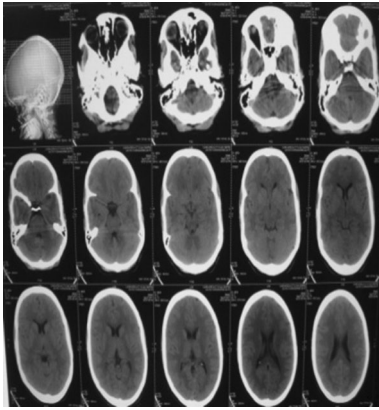


Fig. 7 CT scan of brain showing normal study

kg body weight. She was kept on a regular follow-up and showed definite improvement in the condition during the follow-up period (Fig. 8).

Discussion

Cysticercosis is a helminthic infection caused by ingestion of the larvae of pork tapeworm, *Taenia solium*. During its life cycle, the parasite manifests in various forms such as eggs (proglottids), the oncospheres, the larvae and the adults [4]. It requires different hosts during its different stages of development. Humans are the definitive hosts and harbor the adult worms, while pigs harbor the larval stage and act as the intermediate hosts. The adult worm inhabits the small intestine of humans. Usually, one adult worm is present which lives within the host for years. It is about three meters long with 1000 proglottids (eggs). These gravid segments laden with eggs are then shed in the human stool which infects the pigs when they feed on human feces [5]. Pigs, thus act as the intermediate hosts. These ingested eggs are then dissolved by the gastrointestinal secretions within the pig gut that results in the



Fig. 8 Uneventful healing at surgical site

liberation of the oncospheres (embryos) within the intestinal wall. The oncospheres are then disseminated through the vascular and lymphatic circulation and distributed to various tissues within pigs especially in muscles. Humans acquire these larvae upon consumption of undercooked pork or contaminated water or uncooked raw contaminated vegetables [6].

Once ingested, they reach the human small intestine and develop into adult tapeworms. The larvae may remain dormant in the human intestines for long periods during which the individual remains asymptomatic. The larvae may get disseminated to the cerebral or retro-orbital tissues through the vascular or lymphatic route resulting in occasional episodes of sudden seizures or retro-orbital pain.

Cysticercosis in humans is common in the brain, subcutaneous tissue, muscles and the eyes [7]. Oral cysticercosis is a rare event and usually an asymptomatic condition. The most common intraoral sites include tongue (42.15%), lips (26.15%) and buccal mucosa (18.9%) [8]. Although any site in the oral cavity may be involved, a review of the reported cases has shown that tongue is the most common site, as reported by Krishnamoorthy et al. [1]. Based upon the site involved, a number of differential diagnoses of the lesion can be made.

Nodules on the lips and cheek may be considered as fibroma, lipoma, mucocele, pyogenic granuloma or pleomorphic adenoma. Nodules on the tongue may be considered as pyogenic granuloma, fibroma, granular cell tumor, or rhabdomyoma. [5].

According to a study conducted by Lustmann and Copelyn, Latin America, India, Eastern Europe, and Southern Africa are considered as endemic areas for this condition. However, increased immigration and travel-related intestinal tapeworm infestation have also resulted in spread of this disease to non-endemic areas as well [9].

Excisional biopsy of the lesion followed by histopathological examination is the only confirmatory diagnostic tool. The stained H and E sections demonstrate presence of larvae within the tissues and/or scolex within the cystic lesion [1]. Other diagnostic modalities include ultrasonography, conventional radiographs (that show presence of calcifications within muscles), computed tomography and magnetic resonance imaging. Serology also proves to be a useful adjuvant diagnostic tool. Immunodiagnosis can be achieved in the serum, CSF, and saliva either by enzyme-linked immunosorbent assay (ELISA) or enzyme-linked immune electrotransfer blot (EITB). Recently, a new diagnostic tool known as *T. solium* cyst fluid antigen-based lymphocyte transformation test (LTT) which has a specificity and sensitivity greater than ELISA and EITB, has become popular [5].

Treatment includes surgical enucleation of the cystic lesion along with administration of antihelminthics such as

praziquantel and albendazole as discussed by De Souza et al. [9]. The use of systemic antihelminthics is advocated in symptomatic or disseminated cases such as those with neurocysticercosis. The currently accepted regimens are either 8 days of albendazole (15 mg/kg/day with a maximum of 400 mg bid) with simultaneous administration of steroids or 15 days of praziquantel (50 mg/kg/day in three divided doses) [1].

Conclusion

Oral cysticercosis, although a rare entity, should be considered in the differential diagnosis of all nodular lesions of the oral cavity. It responds well to surgical enucleation followed by medical management once histologically proven and has a good prognosis without any significant complication. However, it is important to rule out the presence of active infection or the parasitic larvae at other more common critical sites like brain or retro-orbital region. After histological confirmation other imaging modalities such as computed tomography or MRI scan of brain and retro-orbital region is obligatory.

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