JPMER

10.5005/jp-journals-10028-1232

CASE REPORT

Cysticercosis of Lateral Pterygoid Muscle

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ABSTRACT

Cysticercosis is the infection caused by *Cysticercus cellulosae*, the larval stage of the cestode *Taenia solium*. Humans are accidentally or incidentally infected, where it frequently encysts in subcutaneous tissue, brain, and ocular tissue. Involvement of muscles in the head and neck is rare with presence of disseminated or other system involvement. We present a case of isolated involvement of lateral pterygoid muscle with cysticercosis.

Keywords: Cysticercosis, Head and neck, Lateral pterygoid muscle.

How to cite this article: Virk RS, Rathi A, Penubarthi LK, Gupta AK, Bansal S. Cysticercosis of Lateral Pterygoid Muscle. J Postgrad Med Edu Res 2017;51(1):37-39.

Source of support: Nil

Conflict of interest: None

CASE REPORT

A 36-year-old female presented with restriction and pain in opening mouth since 1 week, which was associated with pain around the right preauricular region. There was no history of trauma or fever. Her medical history was noncontributory. There was no history of seizures or passage of worms in stool either. She was a nonvegetarian and had no addictions. On intraoral examination, mouth opening was one finger, and there was no mucosal or palatal lesion noted in the oral cavity. Visible gums and teeth were normal. Cheek and preauricular region on right side was normal on examination, with no suspicious swelling or any signs of inflammation. Temporomandibular joint was palpable normally with no tenderness. Other ear, nose, and throat examination was normal. No swelling was noted in the skin and other parts of the body.

INVESTIGATIONS

Patient was subjected to gadolinium-enhanced magnetic resonance imaging (MRI), which was suggestive of myocysticercosis involving the right lateral pterygoid muscle (Figs 1 and 2). Brain on MRI was normal.

Treatment

Patient was started on albendazole 200 mg bid for 4 weeks and steroids (prednisolone 1 mg/kg body weight) in tapering dose for 2 weeks along with anti-inflammatory medication. She responded well and mouth opening increased drastically in about 5 days time.

DISCUSSION

Cysticercosis is the infection caused by *Cysticercus cellulosae*, the larval stage of the cestode *Taenia solium*, the pork

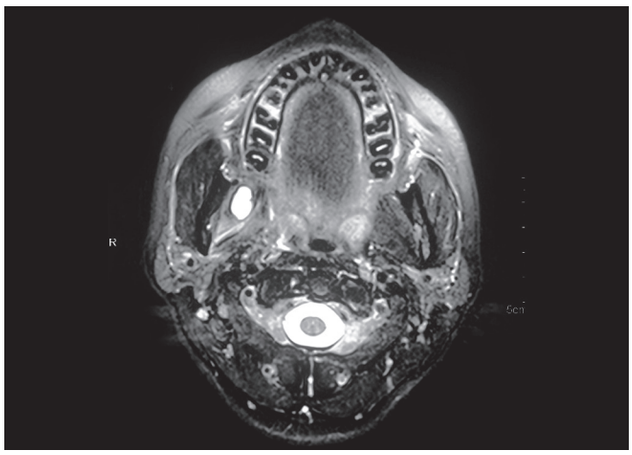

Fig. 1: Magnetic resonance imaging peripherally enhancing cystic lesion with surrounding edema

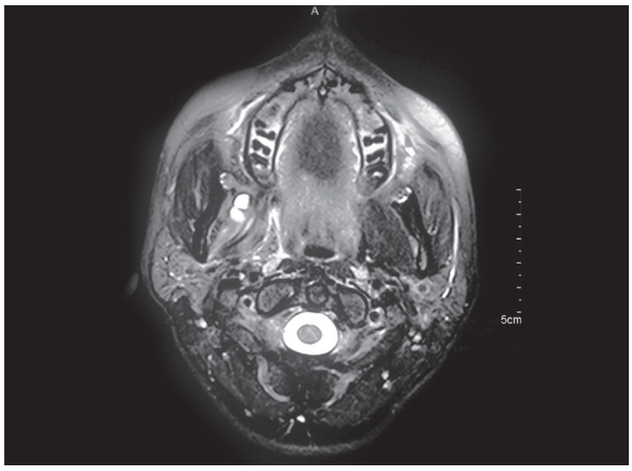

Fig. 2: Magnetic resonance imaging showing a bulky right lateral pterygoid muscle with mild altered signal intensity likely due to inflammatory change

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tapeworm, which is found worldwide. Worldwide estimates suggest there are at least 50 million people infected with cysticercosis. Endemicity has been demonstrated in areas of pork consumption in Latin America, Bhutan, India, Nepal, Thailand and parts of Southeast Asian region, Cambodia, China, New Guinea, Vietnam and parts of Western Pacific region, the non-Muslim population of Africa, and other European countries.[1]

Though seen usually in nonvegetarians (pork eaters), it is also seen in vegetarians. Human beings, both definitive and intermediate hosts, may accidentally or incidentally become the host of parasite in three ways: (1) Fecal–oral infection—ingestion of food or water contaminated by human feces containing *T. solium* eggs; (2) fecal–oral autoinfection—oral ingestion of eggs via the hands of carriers of the adult worm, and (3) internal autoinfection—by regurgitation of eggs into the stomach, which occurs due to reverse peristalsis.[2]

These eggs are partially digested in the stomach, evolve into oncospheres, and subsequently penetrate the small intestinal mucosa to disseminate throughout the body via bloodstream to sites like subcutaneous tissue, striated muscles, brain, and ocular tissue where they eventually form a cyst.[3]

A history of residence or extended travel in an endemic area is usually obtained.

Symptoms due to neurocysticercosis or disseminated cysticercosis help in diagnosis. An asymptomatic, isolated cyst may remain undetected, until it enlarges, migrates, or dies and produces symptoms. When the larva dies, it induces a vigorous granulomatous inflammatory response comprising predominantly of plasma cells, lymphocytes, eosinophils, and macrophages. Later, in long-standing cases, the dead cyst is surrounded by a dense layer of fibrosis or calcification.[4]

In muscular involvement, three distinct types of clinical manifestations have been described: The myalgic type; the mass-like, pseudotumor or abscess-like type; and the rare pseudohypertrophic type. During the death of the larva, there is leakage of fluid from the cyst. The resulting acute inflammation may result in local pain and myalgia. Alternatively, degeneration of the cyst may result in intermittent leakage of fluid, eliciting a chronic inflammatory response, with collection of fluid around the cyst, resulting in the mass-like type, the pseudotumor type, or the abscess-like type.[5]

Isolated Cysticercosis of Muscles of Mastication

Search Strategy and Results

Search was made in PubMed with medical subject heading terms, such as cysticercosis, muscle, temporalis, masseter, and pterygoid. Only articles related to humans in the English literature were selected, while excluding articles of disseminated lesions and articles with associated multiple subcutaneous nodules. A total of 14 case reports of isolated cysticercosis of muscles of mastication are reported in English literature (Table 1).

Table 1: Isolated cysticercosis of the muscles of mastication

1	Singh et al	2013	Temporalis	USG + MRI
			Temporalis	USG + MRI
2	Rastogi et al	2013	Temporalis	USG + MRI
3	Kumar et al	2011	Temporalis	CT + ELISA
4	Sethi et al	2007	Temporalis	MRI + ELISA
5	Tewari et al	2014	Masseter	USG
6	Gupta et al	2014	Masseter	USG
7	Chaurasia et al	2013	Masseter	MRI + HPE
8	Ramakrishnan et al	2012	Masseter	USG + FNAC
9	Gokarn et al	2011	Masseter	USG + MRI
			Masseter	USG
10	Kumar et al	2011	Masseter	USG + FNAC
11	Naik et al	2011	Masseter	USG
12	Mittal et al	2008	Masseter	USG
13	Sidhu et al	2002	Masseter	USG + FNAC
14	Reddi et al	2001	Masseter	CT + HPE

ELISA: Enzyme-linked immunosorbent assay; HPE: High-performance ELISA; FNAC: Fine-needle aspiration cytology; MRI: Magnetic resonance imaging; USG: Ultrasonography

Solitary involvement of masseter muscle presents as bimanually palpable nontender, nodular, firm, mobile swelling, i.e., gradually increasing. Facial symmetry is maintained unless swelling becomes large. It may present as an acute inflammation, with tender swelling.[6] It is usually diagnosed as inflammatory lesion of salivary gland or salivary neoplasm, with differentials including primary and metastatic tumors of masseter muscle, sarcoidosis, lipomas, solitary neurogenic tumors, and vascular lesions.

Isolated involvement of temporalis usually presents as painful, tender swelling with associated headache.[7] Pain may aggravate on chewing and/or application of pressure.[8] History of gradually increasing chronic swelling is usually elicited.[9]

Isolated involvement of pterygoid muscle has never been reported. Our case presented with symptoms due to deep natural position of muscle and limited surrounding space.

Del Brutto et al[10] have given criteria for diagnosis of neurocysticercosis, in which criteria for definitive diagnosis include the following:

- Histopathological demonstration of parasite
- Cystic lesion showing scolex on computed tomography (CT)/MRI
- Direct visualization of subretinal parasite on fundoscopic examination.

According to Jankharia et al,[11] soft tissue cysticercosis on MRI usually displays low signal intensity on T1-weighted images and high signal intensity on T2-weighted images. There may be scolex within cyst. Myocysticercosis

is being increasingly diagnosed on sonographic examination after its first description by Vijayaraghavan.[5] Nine out of 16 cases that reported masticatory myocysticercosis have been managed by radiological diagnosis alone (Table 1). On ultrasonography (USG), four appearances have been described. These include: (1) Cysticercus cyst with surrounding inflammatory mass; (2) irregular cyst with very minimal fluid on one side; (3) large collection of exudative fluid, with the typical cysticercus cyst containing the scolex, and (4) calcified cysticercosis.

Our case was diagnosed based on demonstration of scolex with cyst in the right lateral pterygoid muscle.

MANAGEMENT

Excision is the treatment of choice in extracranial cysticercosis. Medical management is given in inaccessible symptomatic lesions, with corticosteroids and antiparasitic therapy, though role of antihelminthic drugs is not proven in single extracranial cysticercosis.[2]

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