

## Cysticercosis of the Levator Palpebrae Superioris

### Dear Editor,

*Cysticercosis cellulosae*, the larval form of the pork tapeworm *Taenia solium*, causes cysticercosis, in which humans serve as the intermediate hosts in the parasite life cycle. Cysticercosis is endemic in developing regions such as South America, India and China.<sup>1,2</sup> However, a rise in a cysticercosis has been observed in industrialised regions, owing to changing migration and travel patterns in recent years.<sup>3</sup> Ophthalmic cysticercosis involving the vitreous, subretinal, subconjunctival and orbit have been reported previously. In this report, we describe a patient with myocysticercosis of the levator palpebrae superioris (LPS), a rare clinical entity with only 5 other cases in the literature.<sup>4,5</sup>



Fig. 1A. Complete ptosis of the right eye at presentation.

### Case Report

A 23-year-old Indian man presented with 2 weeks of right eye ptosis noticed incidentally on awakening. There was mild upper eyelid discomfort but no diplopia or decreased vision. His ophthalmic and medical histories were unremarkable. The patient was a construction worker and had previously lived in India. His visual acuity was 20/30 and 20/20 in the right and left eyes respectively. Both pupils were symmetric and reactive to light with no relative afferent pupillary defect; colour vision was normal. There was complete ptosis of the right eye with maximum levator function of 3 mm; maximum levator function in the left eye was 13 mm (Fig. 1A). No lid erythema or edema was present. Extraocular movements were full in

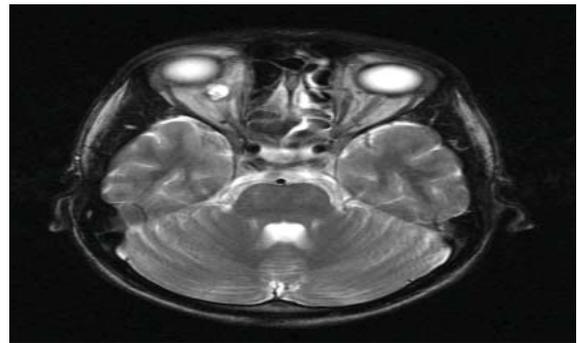


Fig. 1C. Precontrast, T2-weighted axial MRI shows a hyperintensity corresponding to the same mass lesion.

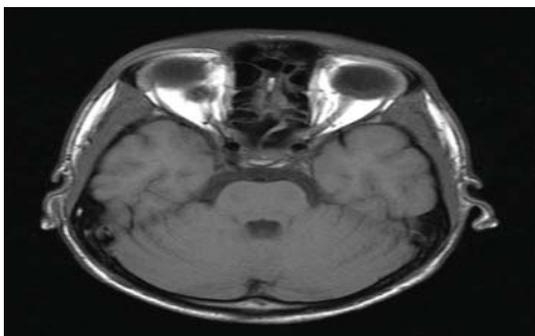


Fig. 1B. T1-weighted axial MRI of brain and orbits demonstrates a 1 x 1.3 x 1.2 cm diameter cystic, predominantly extraconal and retro-bulbar mass in the right eye LPS. An intracystic hyperintensity is discernible and represents the scolex of the *Cysticerci* parasite.

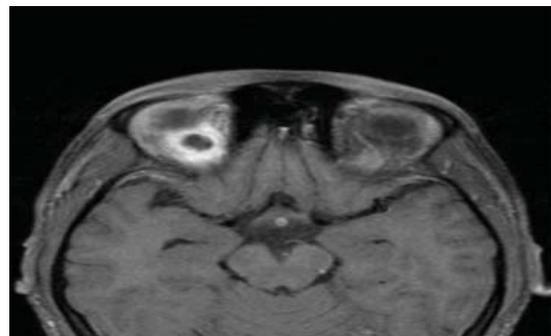


Fig. 1D. Post gadolinium contrast-enhanced axial T1-weighted MRI reveals rim-enhancement of the mass. Thickening and enhancement of the right eyelid is present.



Fig. 1E. Axial CT shows a hypodensity consistent with a cyst and a scolex which is prominently represented by the intracystic hyperdensity.

all directions of gaze. Hertel exophthalmometry was 17.5 mm in the right eye and 16.5 mm in the left eye; the right globe was displaced 1 to 2 mm inferiorly and 1 mm in an outward direction. The right orbit was firm to ballotment. Intraocular pressure was 13 mmHg (19 mmHg in upgaze), and 11 mmHg (13 mmHg in upgaze) in the right and left eyes, respectively.

MRI revealed a cystic mass in the right LPS which was hypointense in the T1-weighted image and hyperintense in the T2-weighted image relative to the extraocular muscles; the lesions showed rim enhancement with contrast (Figs. 1B to 1D). On the T1-weighted image, an intracystic hyperintensity, corresponding to a hyperdense structure on CT (Fig. 1E), suggested a scolex. The eosinophil count, erythrocyte sedimentation rate and C-reactive protein were normal. Stool tests were negative for *Taenia solium* and its ova, and lower limb MRI did not disclose any soft tissue or intramuscular cysts. The patient was diagnosed with LPS myocysticercosis, and started on oral albendazole 400 mg twice a day and oral prednisolone 80 mg once a day. At one week, maximum levator function improved to 7 mm, and prednisolone was tapered. At day 18 of treatment, he developed upper lid edema on 40 mg/day of prednisolone, which resolved completely by day 20 after prednisolone was increased to 50 mg/day (Fig. 1F). Oral albendazole and tapering doses of prednisolone were continued for an intended total 6-week course. At the last follow-up visit 5 weeks after treatment was initiated, we observed complete recovery of ptosis. The patient was subsequently lost to follow-up.

## Discussion

Cysticercosis of the LPS, superior rectus, eyelid or anterior orbit are important differential diagnoses for acquired



Fig. 1F. At Day 20 of treatment, near-complete improvement in ptosis.

ptosis. Features suggestive of LPS myocysticercosis include a young patient from an endemic region with a suggestive exposure history, proptosis, mild lid edema or erythema and a palpable cystic eyelid mass.<sup>1</sup> Eosinophilia, inflammatory markers and enzyme-linked immunosorbent assay (ELISA) for cysticercus-specific antibodies are insensitive diagnostic markers.<sup>1,5</sup> In contrast, orbital imaging is key to diagnosing myocysticercosis. The presence of high amplitude spikes corresponding to the cyst wall and scolex on A-scan ultrasound (US), or an intracystic scolex on B-scan Ultrasound (US) or computed tomography (CT) scan is diagnostic.<sup>1,5</sup> Imaging may therefore distinguish myocysticercosis from other cystic lesions of the extraocular muscles, such as *Echinococcus granulosus* (hydatid cyst), cystic tumours or extraocular myositis with cystic changes. A hydatid cyst lacks a scolex and does not usually demonstrate intense rim enhancement. Making a radiologic diagnosis is important as myocysticercosis responds well to anti-helminthic therapy, while surgical excision is the primary treatment modality for hydatid cysts or tumors. US and CT appear comparable in ability to detect the scolex.<sup>2,5</sup> However, CT may be preferable as intracranial CT can identify cerebral cysticercosis, which was as high as 16.7% in a case series of myocysticercosis.<sup>6</sup> This may be of clinical importance owing to the risk of encephalitis and seizures during destruction of the intracerebral cyst after anti-helminthic therapy.

The treatment of choice for myocysticercosis is albendazole, which is efficacious if administered early and with adjunctive systemic steroids.<sup>5-9</sup> The clinical efficacy of albendazole on extraocular motility outcomes has been demonstrated in retrospective and non-randomised prospective studies.<sup>5-9</sup> In some of these reports, cyst elimination rates were more than 90%, and time to recovery of ocular motility ranged between 0.5

and 35 months.<sup>1,7,8</sup> Although there are contrasting reports describing ocular motility limitation in extra-ocular motility after albendazole,<sup>5,10,11</sup> the delayed initiation of therapy (in the order of months) and failure to administer adjunctive steroids may explain the poorer outcomes of in these studies. A short duration of follow-up may also have limited observation of favourable clinical response.<sup>10</sup> Steroids may control inflammation from dying cysticerci and so reduce chronic fibrotic sequelae which may impact long-term ocular motility.<sup>1</sup> The efficacy of albendazole in LPS myocysticercosis is likely similar to extraocular myocysticercosis as a group.<sup>5</sup> In the patient described above, albendazole was promptly initiated after presentation and a good therapeutic outcome was achieved. Oral albendazole has a mild side effect profile (gastrointestinal distress and giddiness).

In contrast to medical treatment, surgical excision is technically difficult due to attachment of the cysts to underlying orbital structures, the amorphous consistency of degenerating cysticerci<sup>6</sup> and the risk to neurovascular structures in the posterior orbit. There is also a likelihood of postoperative restrictive myopathy arising from the fibrotic response in surgical excisions of large cysts or in cysts requiring extensive dissection from the underlying muscle.

### Conclusion

In conclusion, a high index of suspicion for LPS myocysticercosis is needed for patients from endemic regions with acquired ptosis. Similar to cysticercosis of other extraocular muscles, orbital imaging is important in making this diagnosis. The resolution of ptosis appears favourable with medical therapy.

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