Acute onset isolated sixth nerve palsy due to neurocysticercosis – An unusual presentation.

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Abstract
We report a case of nine years old girl, presented to a tertiary care centre with complaint of esotropia right eye associated with frontal headache of one week duration. Ocular evaluation revealed right lateral rectus palsy and fundus examination showed bilateral papilloedema. On investigations, peripheral blood smear showed eosinophilia and MRI Brain and orbit showed multiple ring enhancing lesions in bilateral cerebral hemispheres suggestive of extensive neurocysticercosis with right medial rectus muscle involvement. The patient was managed with Intravenous mannitol and dexamethasone followed by oral steroids with oral albendazole for a month in consultation with the paediatrician. The patient responded well to treatment, with resolution of right lateral rectus palsy and papilloedema after two months.

Keywords: Esotropia, papilloedema, neurocysticercosis.

Introduction
Human cysticercosis, results from infestation with the larvae of the pork tapeworm, Taenia solium. It is a major public health problem in the country and the developing world. Cysticercosis occurs in human host by faecal-oral contamination with T solium eggs by eating under cooked pork or by contaminated water, food or vegetables. T solium has a complex two-host life cycle. Human beings are the only definitive host and harbour the adult tapeworm (taeniasis), whereas human can also become accidental intermediate host. Infection with T.solium results in the formation of cysticerci in the human body. The central nervous system, subcutaneous tissue, skeletal muscle, heart muscle and eye are the sites for predilection for the development of cysticerci in human host.

Ocular cysticercosis can be extraocular or intraocular and may have varied clinical presentations. However, the association between orbital cysticercosis and systemic cysticercosis is considered rare. Here we present a case of acute onset sixth nerve palsy due to raised intracranial pressure in a case of neurocysticercosis with medial rectus involvement.

Case Report
A previously healthy 9 years old girl, non-vegetarian by diet, presented to a tertiary care centre with a history of sudden onset, painless, inward deviation of right eye associated with frontal headache of one week duration. No history of head or ocular trauma, fever, diplopia, vomiting or seizures. There was no history of any contact with pets or passage of worms in stools. No past history of spectacle use or refractive error. On evaluation, distant visual acuity was 6/6 both eyes on Snellen's chart with no refractive error on cycloplegic refraction. There was obvious right face turn. Extra ocular movements showed restricted abduction(Figure1) in right eye. On torch light examination, Hirschberg test showed 30 degree of esotropia right eye in primary position(Figure 1).

Cover test confirmed the deviation. On cover uncover test, right eye could not take fixation.

Maddox rod test showed 50 degree prism dioptre base out deviation in right eye. No palpebral fissure changes, diplopia in primary gaze or nystagmus was found. Force duction test ruled out medial rectus contracture and force generation test showed lateral rectus paresis. Anterior segment examination was normal in both eyes. Pupils were bilaterally round and briskly reacting to light. Dilated fundus examination revealed optic disc raised, blurred margins with loss of physiological cup suggestive of bilateral papilloedema (Figure 2). Intraocular pressure was 15 mm of Hg in right eye and 16 mm of Hg in left eye .Systemic examination was unremarkable and examination of other cranial nerves was essentially normal. A provisional diagnosis of isolated sixth nerve palsy with papilloedema was made.
3 days followed by with oral albendazole (15mg/kg/day) and oral prednisolone (1mg/kg/day) for 4 weeks in consultation with the paediatrician. Oral prednisolone was tapered over next four weeks. The patient responded well to treatment with convalescence of headache, clinically improvement in ocular movements and resolution of papilloedema (Figure 4 (a) and 4 (b)

Fig. 4 (a): Extraocular movements – post therapy,

Fig. 4 (b): Resolution of papilloedema

**Discussion**

Taenia solium inhabits the small intestine of man and has world-wide distribution. Scholl and Soemmerring discovered a live Cysticercus cyst in the anterior chamber in 1889.\(^5\) Ocular infestation by its larva, Cysticercus cellulosae, is commonly found in the developing countries. In Indian subcontinent, 78% of the cases of ocular cysticercosis have been reported from Andhra Pradesh and Pondicherry.\(^5\)

It has myriad clinical presentations and depends on the location, size, relation to the adjacent structures and the stage of evolution of the cyst. Neurocysticercosis is the most common form of systemic involvement. Ocular cysticercosis can be extraocular (in the subconjunctival or orbital tissues) or intraocular (in the vitreous, subretinal space, or anterior chamber). The extraocular muscle form has been reported to be the most common form of orbital and adnexal cysticercosis.\(^7\) Disturbance in ocular motility is the most common presentation in extraocular form. Amongst the extra ocular muscles,
superior rectus, lateral rectus, medial rectus and the superior oblique muscles are most commonly affected. 

Almost a third of cases with neurocysticercosis presents with headache and vomiting. With extraocular muscle involvement, simultaneous brain involvement is reported in 16% of cases. Papilloedema has been reported in 2.39 to 6.6% of paediatric cases. Changes in intracranial pressure either increased or decreased may result in downward displacement of the brainstem causing stretching of the abducens nerve which is tethered as its exits the pons inside the Dorello's canal. Patients with sixth nerve palsy present with binocular horizontal diplopia, worse in the distance, and esotropia in primary gaze. Examination for sixth nerve palsy involves documenting the presence or absence of papilledema, examining the ocular motility, evaluating the eyelids and pupils, and excluding involvement of other cranial nerves (eg, V, VII, VIII). In this patient, we found unilateral esodeviation with limitation in abduction corresponding to abducens nerve palsy and bilateral papilloedema. The rest of cranial nerves were normally functioned. CT/MRI are imaging modalities of choice for diagnosing myocysticercosis involving extraocular muscles. As our patient was having headache, we went in for MRI with showed neurocysticercosis with medial rectus muscle involvement. However, the child presented with unilateral abduction deficit due to false localising sign with raised intracranial pressure. Oral albendazole acts by blocking glucose uptake of the parasite and depleting its glycogen stores. This leads to death of the larva with release of toxins which causes severe inflammation. Concurrent usage of oral steroids suppress this inflammation and its sequelae. Steroids have also been reported to increase the plasma levels of albendazole. Pandey et al. started oral steroids 3 days prior to therapy with albendazole. This was noted to suppress the inflammatory reaction that peaks on the third day following beginning of therapy. In this case, initially mannitol with dexamethasone was given to manage raised intracranial pressure followed by oral steroids with albendazole and complete recovery was achieved after 2 months.

References

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