

Acute comitant esotropia in a very young child due to combined mechanism: A case report

*Allapitchai Fathima, Meenakshi Ravindran,
Neelam Pawar, Padmavathy Maharajan,
Ramakrishnan Renagappa*

We report a case of esotropia with high hyperopia in a 3-year-old female child. She was initially treated with hyperopic correction and noted to have residual esotropia, which was diagnosed as partial accommodative esotropia. Later when she presented with headache, she was diagnosed to have an intracranial tumour. To our surprise, after neurosurgical excision of tumour, her non-accommodative component of the esotropia resolved over 1 year implying that the intracranial lesion was an


additional causative factor for this acute onset Accommodative esotropia. The child attained Orthophoria with the same hyperopic correction.

Key words: Acute esotropia, intracranial space-occupying lesion, medulloblastoma, partially accommodative esotropia, resolution of esotropia

Acute acquired comitant esotropia is a relatively rare entity that occurs in older children and adults. It is categorised into seven types. Accommodative esotropia is one of the commonest causes and intracranial neoplasm is one of the unusual causes.^[1] Accommodative esotropia occurs usually within 2-3 years of age. Our patient had both accommodative esotropia and intracranial neoplasm as causative factors for acute onset comitant esotropia. To best of our knowledge, no such case is reported particularly in a very young child.

Case Report

A 3-year-old female child was brought with the complaints of deviation of an alternate eye for the past 7 months [Figs. 1 and 2a]. There was no fever, physical or psychological stress at the onset. She was born at full term and had normal developmental milestones. She did not have any systemic illness. Family history was nil significant.

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Department of Paediatric Ophthalmology, Aravind Eye Hospital, Tirunelveli, Tamil Nadu, India

Correspondence to: Dr. Allapitchai Fathima, Aravind Eye Hospital, 1, S N High Road, Tirunelveli, Tamil Nadu - 627 001 India. E-mail: fathima.a@gmail.com

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Figure 1: Orthophoria at 2 years of age

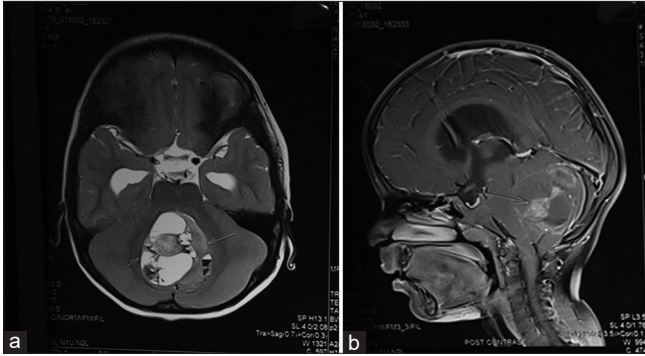


Figure 3: MRI brain: (a) axial view showing a solid cystic mass in cerebellar vermis, (b) sagittal view showing dilatation of third and fourth ventricles indicating obstructive hydrocephalus

On examination, the visual acuity was 20/20 in each eye separately, assessed using Cardiff card at 1 m. She had alternate esotropia with equal dominance, measured to be 45 PD esotropia for distance and near. Extraocular movements were full. No lateral incomitance and no nystagmus were noted.

Cycloplegic retinoscopy revealed high hyperopic shadow +7D sphere +2D cylinder at 180° in right and left eye similarly. Anterior segment examination was normal. Posterior segment examination revealed small hypermetropic disc with no evidence of disc oedema. The systemic examination was normal.

Considering the age of onset and high hyperopic refractive error the diagnosis was made as refractive accommodative esotropia. The child was prescribed spectacles.

In the subsequent visits after the third and sixth months, the child revealed same amount of 45 PD esotropia for near and distance without correction and 35 PD esotropia with correction for near and distance [Fig. 2b]. Hence, the diagnosis was revised to be partially accommodative esotropia. At the 11th month, the child presented with complaints of headache and noted to have the same amount of esotropia.

The fundus examination revealed elevation of disc margin with oedema of retinal nerve fiber layer in both eyes suggestive of papilloedema. MRI brain revealed 4.5 cm × 4.5 cm × 4.1 cm heterogeneously solid cystic mass in cerebellar vermis extending into the fourth ventricle with obstructive hydrocephalus [Fig. 3a and b]. The lesion was suspected to be Medulloblastoma. The patient was referred to

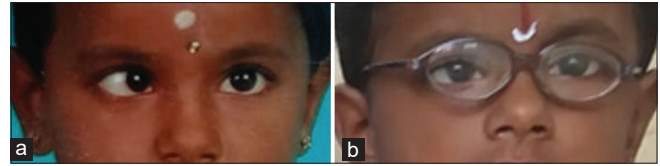


Figure 2: At 3 years of age, (a) esotropia without hyperopic correction, (b) partially accommodative esotropia with hyperopic correction

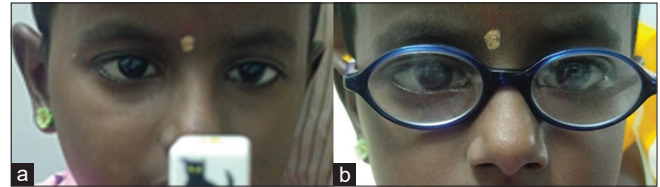


Figure 4: After surgical resection of medulloblastoma, (a) esotropia without hyperopic correction, (b) orthophoria with hyperopic correction

neuro-surgical centre, where suboccipital craniectomy with gross total resection of the mass was done on 10/4/2018 after ruling out metastasis to the spine. The pathological study confirmed the diagnosis. The child underwent a course of radiotherapy thereafter.

On follow-up after 2 months, the child had subsidence of headache with decreased esotropia. It was measured to be 30 PD without spectacles both for near and distance. She did not allow measurement with spectacles. After 1 year, she was noted to have 25 PD esotropia without spectacles for near [Fig. 4a and b] and distance and orthophoria with the same spectacles.

Discussion

Accommodative esotropia is classified into refractive, non-refractive and partially accommodative esotropia. Refractive esotropia disappears with hyperopic correction. Partially accommodative esotropia shows an improvement of esotropia partially by 10 PD or more with full hyperopic correction.^[2] Since our patient showed a reduction of esotropia by 10 prisms with spectacles, she was diagnosed as a case of partially accommodative esotropia.

Rustein RP has attributed the cause for a non-accommodative component of partially accommodative esotropia in older children to either mechanical factors like contracture of medial rectus, conjunctiva or tenons capsule or increased convergence tonus.^[3] The same author in another case report has mentioned that refractive accommodative esotropia has deteriorated to partly accommodative esotropia because of either delayed or incomplete treatment or poor compliance.^[2] Initially, we attributed the delayed presentation of the patient as well as poor compliance with spectacles as reasons for partial improvement with spectacles.

Rustein RP has cautioned in cases of presumed late-onset accommodative esotropia in older children where hyperopic correction fails to improve esotropia, as one such child showed intracranial neoplasm.^[4] Buch and Vinding reported the case of pontine glioma in a 4.5-year-old boy who was initially treated with spectacles due to the presence of hyperopia (+2.5 D).^[1] Though our case is similar to these, it differs in two ways. Our child is younger with high hyperopia and her esotropia partially improved with hyperopic correction.

Medulloblastoma is the commonest childhood malignant central nervous system tumour.^[5] It occurs in the midline of the cerebellum^[6,7] and encroaches on the cisterna magna leading to obstructive hydrocephalus and signs of increased intracranial pressure.^[5] Resection of the tumour before the development of metastasis carries a good prognosis. Lorraine Cassidy *et al.*^[6] has reported that papilloedema (62.5%) and nystagmus (62.5%) are the common complications of childhood medulloblastoma. Similarly, our patient had headache and papilloedema but it was preceded by acute onset esotropia.

The resolution of esotropia following treatment for intracranial lesions is variable. One 3-year-old child did not have resolution following removal of pilocytic astrocytoma^[8] and a few other cases had resolutions over 5-7 months following treatment for intracranial lesions.^[9,10]

Though we have not done imaging in the earlier period, the non-accommodative component of esotropia (which was large) had completely resolved implying that this tumour had additional role in the causation of esotropia.

Conclusion

We report this case for its unique presentation of acute onset comitant esotropia in a very young child with more than one causative factor. The presence of high hyperopia can mislead and cause delay in the diagnosis of intracranial neoplasm in a similar case scenario, as the cause of headache can be attributed to non-compliance of spectacles. Also, hypermetropic small disc can conceal early papilloedema. Hence, we emphasize that in partially accommodative esotropia particularly where a large amount of esotropia remains uncorrected and constant after full refractive correction, other mechanisms need to be suspected. Regular follow-ups and careful fundus examinations during each visit are paramount important in such cases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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