

FIVE THINGS TO KNOW ABOUT ...

Esotropia

Sean A. Kennedy, Jason Noble MD, Agnes M.F. Wong MD PhD

Esotropia is a type of strabismus in which the eye is turned inward

Esotropia is the most common type of strabismus, accounting for more than half of strabismus cases in children.¹ The incidence is about 1% over 10 years for patients under 19 years of age.¹ Risk factors for esotropia in children include premature birth, maternal smoking during pregnancy and refractive errors.²

Examining ocular motility is necessary to determine whether the deviation varies in different directions of gaze

If the amount of deviation is the same regardless of the direction of the patient's gaze, the esotropia is comitant. Comitant esotropia is commonly associated with refractive error, abnormal accommodation or sensory deprivation as a result of conditions such as cataract or retinoblastoma.³ If the amount of deviation varies with the direction of the gaze, the esotropia is incomitant. These deviations may be related to mechanical restriction (orbital mass or fracture, thyroid dysfunction), or innervation abnormalities (palsy of the abducens nerve, myasthenia gravis).³

Competing interests: Agnes Wong has received grants from the Canadian Institutes of Health Research; she receives royalties from Oxford University Press.

This article has been peer reviewed.

Affiliations: From the Faculty of Arts and Science (Kennedy) and the Department of Ophthalmology and Vision Sciences (Noble, Wong), University of Toronto, Toronto, Ont.

Correspondence to: Agnes Wong, agnes.wong@utoronto.ca

CMAJ 2012. DOI:10.1503/cmaj.111566

Esotropia is confirmed by the cover test

During the cover test (Figure 1), the patient fixes his or her gaze on a distant target. The examiner then covers one of the patient's eyes while observing the movement of the other eye. If the other eye moves outward (away from the nose) to pick up the gaze, esotropia is present. The procedure is then repeated, covering the other eye.³ Testing ocular alignment is a component of vision screening during well-baby visits.⁴



Figure 1: Testing strabismus in a child using the cover test.

Children with esotropia should be referred to an ophthalmologist¹

Prompt treatment may be required to prevent amblyopia (reduced visual acuity) and maximize stereoacuity. Infantile esotropia within the first six months of life that is constant with a large deviation generally requires surgical correction before one year of age.⁵ Esotropia presenting later in childhood may respond to correction of refractive error using glasses. Any amblyopia requires treatment with patching or atropine penalization (instillation of atropine drops to blur the vision in the better-seeing eye). Surgery is indicated if adequate ocular alignment is not achieved using conservative measures.³

Serious neurologic problems can present as acute-onset esotropia

Disorders causing raised intracranial pressure, such as an intracranial neoplasms or meningitis, can present as acute-onset esotropia secondary to a palsy of the abducens nerve.⁵ In very young children, a comitant esotropia may not require neuroimaging. However, in the presence of ophthalmic or neurologic symptoms, papilledema or nystagmus, urgent neuroimaging is required.

References

- Greenberg AE, Mohny BG, Diehl NN, et al. Incidence and types of childhood esotropia: a population-based study. *Ophthalmology* 2007;114:170-4.
- Cotter SA, Varma R, Tarczy-Hornoch K, et al. Risk factors associated with childhood strabismus: the Multi-Ethnic Pediatric Eye Disease and Baltimore Pediatric Eye Disease studies. *Ophthalmology* 2011; 118:2251-61.
- Wong AMF. *Eye movement disorders*. New York (NY): Oxford University Press; 2008.
- Vision screening in infants, children and youth. Ottawa (ON): Canadian Paediatric Society; 2009. Available: www.cps.ca/english/statements/cp/cp09-02.htm (accessed 2011 Oct. 4).
- Wong AMF. Timing of surgery for infantile esotropia: sensory and motor outcomes. *Can J Ophthalmol* 2008; 43:643-51.