

## A Study of Essential Infantile Esotropia.

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### ABSTRACT

**Introduction:** Essential infantile esotropia is an entity in squint that requires particular attention because of its varied etiology and variable associated findings and that it most of the times requires early surgical intervention. **Aims and Objectives:** Our aim is to study incidence of occurrence, associated findings and binocular status of these patients. **Materials and Methods:** This is a retrospective study of 50 cases of Essential infantile esotropia who attended squint clinic of a tertiary referral center between September 2009 to September 2012 & were studied for their age of presentation, squint, cycloplegic refraction, binocular status and amblyopia. **Results:** Amongst 50 cases 46% were male and 54% were female patients. Most i.e. 62% cases presented between 1 to 2 years of age. 76% patients had unilateral deviation. Incidence of amblyopia was 76%. 2% cases had myopia, 90% had mild to moderate hypermetropia, and 8% cases had high hypermetropia. 52% patients had inferior oblique over-action, 28% had nystagmus, 8% had head posture, 8% had Dissociated Vertical Deviation. Stereopsis was not present in a single case. **Conclusion:** Our study assesses that the age of presentation is between 1 to 2 years. Amblyopia is commonly associated with unilateral deviation. Moderate hypermetropia is common. Inferior oblique over action is the most common association.

**Keywords:** Essential infantile esotropia, squint

### Introduction:

Convergent concomitant strabismus in the vast majority of cases may be looked upon because of perversion of developing binocular reflexes; a minority is due to the disruption of these reflexes if they have been imperfectly consolidated.

Von Noorden has described consistent characteristics of essential infantile esotropia<sup>2</sup> as

- Onset from birth to 6 months.
- Large angle ( $\geq 30^\circ$ ).
- Stable angle which may increase with time.
- Initial alternation with crossed fixation.
- Occasionally also very early fixation preference.
- Asymmetrical optokinetic nystagmus.

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The eyes of a newborn infant are rarely aligned, especially during the first weeks of life when they frequently shift between alignment and a convergent or divergent position. As the infant grows older, the eye movements become increasingly coordinated, and by the age of 3 months, normal oculomotor behavior is usually established. We performed this study to find out the clinical presentation of children with infantile esotropia.

**Materials and methods:**

Retrospective data of cases of Essential Infantile Esotropia who attended the squint orthoptic clinic between September 2009 - September 2012 were studied.

The patients were examined according to following Proforma:

- Name :
- Age:
- Sex:
- Address:
- Family History:
- Birth History
- Personal History
- Chief Complaints
- Age of onset :
- Precipitating cause :
- H/O previous treatment taken :
- Exact anomaly observed at the beginning and its variability :

General Examination:

Ophthalmological Examination: -

- Head posture :
- Position of lids:

Vision (if possible)	Right Eye	Left Eye
Without glasses		
With glasses		

- Anterior segment :
- Type of Deviation :

Hirschberg corneal reflection test:

Cover test :	Near	Distance
Without glasses:		
With glasses:		

- Amount of Deviation

Prism Bar Cover Test: Near

Distance

- Fundus : Disc Macula

- Fixation (By ophthalmoscope)

- Cycloplegic Retinoscopy :

- Examination on synoptophore (only co-operative children)

- Advice :

- Treatment :

Glasses;

Orthoptics;

Occlusion;

Surgery;

Type of Surgery

Amount of Surgery;

Materials used for examination:

- Occluder for cover test.
- Retinoscope, Cycloplegic drug for retinoscopy.
- Direct Ophthalmoscope for fixation pattern & fundus.
- Synoptophore.
- Picture Chart
- Fixation Target

**Results:**

**Table 1: Sex Incidence**

Sex	Percentage
Males	46
Females	54

**Table 2 Age at Presentation**

Age	0-2 yrs	2-3 yrs	3-4 yrs	4-5 yrs	>5 yrs
%	40	28	2	12	2

**Table 3 Angle of Deviation with PBCT\***

Deviation	<15 PD <sup>#</sup>	15-25 PD	25-50 PD	>50 PD	PBCT not possible
%	2.5	10	30	37.5	20

\*Prism Bar Cover Test, # Prism Diopters

**Table 4 Refractive Error**

Refractive Error	Myopia	Moderate Hypermetropia	High Hypermetropia
%	2	90	8

76% had amblyopia.

**Table 5 Fixation Pattern**

Fixation	Central Steady	Central Unsteady	Eccentric Fixation	Fixation not possible
%	40	32	26	2

**Table 6 Associated Findings**

Associated findings	Nystagmus	IO* Overaction	DVD <sup>#</sup>	A/V Pattern <sup>+</sup>		Head Posture
				A pattern	V pattern	
%	28	52	8	0	4	8

\*Inferior Oblique, #Dissociated Vertical Deviation, + Changes of horizontal deviation in up and down gaze resembles alphabets A or V

Family History – 14% cases had family history of squint.

**Discussion:**

In our study, 46% were males and 54% were females. Similar results were obtained in a study in Italy where 45% were males and 55% were female patients<sup>3</sup>.

Age at presentation in our series was between birth to 2years of age in 40% cases. The term *congenital esotropia* is often used interchangeably with infantile esotropia, but few cases are actually noted at birth. Often the exact date of the deviation is not precisely

established, but the appearance of an esodeviation by 6 months is widely accepted by ophthalmologists as necessary to make the diagnosis<sup>4</sup>.

Family History was present in 14% of our cases. Certain risk factors have been associated with infantile esotropia. Significant among these are prematurity, family history or secondary ocular history, perinatal or gestational complications, systemic disorders, use of supplemental oxygen as a neonate, use of systemic medications<sup>5</sup>.

In our study, 98% patients had deviation of more than 25 Prism dioptres (PD) out of which 14% had more than 50PD. In a study conducted in Italy on 576 patients pre-operatively, 36.5% patients had a deviation between 30 and 40 PD, 31.4% between 41 and 59 PD and 32.1% had deviation  $\geq 60$  pD<sup>6</sup>.

90% of our patients had moderate hypermetropia. 8% had high hypermetropia. The prevalence of high hyperopia was found to be 14.4% (37/256) in infantile esotropia in a study conducted by SSK Ankara Eye Disease Hospital Ankara, Turkey<sup>7</sup>.

Incidence of Amblyopia was 76% in our study. Normal visual development is rapid during the first six months of life and continues through the first decade. Young children are uniquely sensitive to conditions that interfere with vision and visual development. Amblyopia, or functionally defective development of the central visual system, may be caused by common vision problems such as strabismus, uncorrected refractive errors and deprivation secondary to occlusion. Prematurity is especially associated with eye pathology, including retinopathy of prematurity, amblyopia, strabismus and refractive errors. When detected early, amblyopia and many other childhood vision abnormalities are treatable, but the potential for correction and normal visual development is inversely related to age. Since many affected children are asymptomatic, early detection of abnormal visual function requires effective screening throughout early childhood. Special considerations apply to screening examinations of children born prematurely<sup>8</sup>.

In our study, the most common association with essential infantile esotropia was inferior oblique overaction i.e. 52%. In a study done by Eustis HS, Nussdorf JD, it was found that Inferior oblique overaction developed in 72% of patients with infantile esotropia but generally is not recognized until the patient is between 2 and 4 years of age<sup>9</sup>.

### **Conclusion:**

The age of presentation is between 1 to 2 years in children with essential infantile esotropia. Amblyopia is commonly associated with the deviation. Moderate Hypermetropia is common in children of infantile esotropia. Inferior oblique overaction is the most common association.

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