

# PRESENTATION OF CHILDHOOD SQUINT

Mir Ali Shah, Saleem Khan and Shad Mohammad

*Department of Ophthalmology,  
Postgraduate Medical Institute,  
Lady Reading Hospital, Peshawar*

## SUMMARY

*This is a prospective study of fifty consecutive cases of squint in children. The study was designed to find out the age of onset and presentation of childhood squint along with the influence of hereditary and refractive errors. The study was conducted from November 1994 to August 1996 at the Department of Ophthalmology, Lady Reading Hospital, Peshawar. Inquires regarding history of state of vision, duration of deviation, laterality, head tilt, fever, trauma, consanguinity, refractive error or squint in family, drugs taken during pregnancy, smoking and antenatal problems, were made. Full ophthalmic examination, cycloplegic retinoscopy and fundoscopy and tests for binocular single vision were performed and amblyopia noted. Of these 50 patients, 54% were males and 46% were females with an age range between 6 months and 16 years. Esotropia was present in 88% and exotropia in 12% of patients. Visual acuity could be measured accurately in 70% of children. Hypermetropia was seen in 74% of patients and myopia in only 6%, whereas 20% of patients were emmetrope. 32% of children were amblyopic and consanguinity was present in 62%. The presentation was delayed for more than 1 year in 94% of patients. Concomitant esotropia was the most common type. Anisometric strabismus was found to be a common cause of amblyopia and heredity has an influence on childhood squint.*

## INTRODUCTION

Childhood strabismus is one of the most common ophthalmic disorders in the pediatric population. Because of its close relationship to refractive errors, binocular

single vision, amblyopia and being cosmetic demands early diagnosis and proper management.

Whereas examining a child is tedious and tricky for the examiner, the regular visits and cooperation in the treatment of

amblyopia put a great responsibility on the parents as well.

## MATERIAL AND METHODS

Children up to the age of 16 year were included in the study. We studied fifty consecutive children with squint from Nov 1994 to Aug 1996. Patients were enrolled after informed consent of their parents. The diagnosis of squint was made from the history by the parents and examination of the child. All patients underwent complete ophthalmic evaluation and systemic examination. This included a detailed history with special emphasis on state of vision, duration of deviation, laterality, head tilt, fever and trauma. Associated illness or anomalies were looked for. Any history of consanguinity, refractive error or squint in the family was noted. Drugs taken during pregnancy, smoking and antenatal problems were inquired about. Full ophthalmic examination including visual acuity, ocular movements, degree of squint by Hirschberg,

Krimsky and prism bars for distance and near were noted. A search was made for A V-phenomena, overaction of the oblique muscles and presence of different syndromes like Duane's retraction. Cover uncover, alternate cover tests and prism cover tests were performed. The presence of abnormal retinal correspondence and eccentric fixation was noted. Cycloplegic retinoscopy and fundoscopy were performed. Convergence to 8 diopter base out prism, Worth's four dot, Titmus and TNO tests were used to check binocular single vision. Amblyopia, a difference of two or more Snellen's lines in visual acuity between the two eyes, was looked for.

## RESULTS

We studied fifty cases of childhood strabismus. Twenty seven (54%) were males and twenty three (46%) were females. The age ranged from 6 months to 16 years. The age distribution at onset of squint is shown in Fig-1. Forty seven (94%) were concomi-

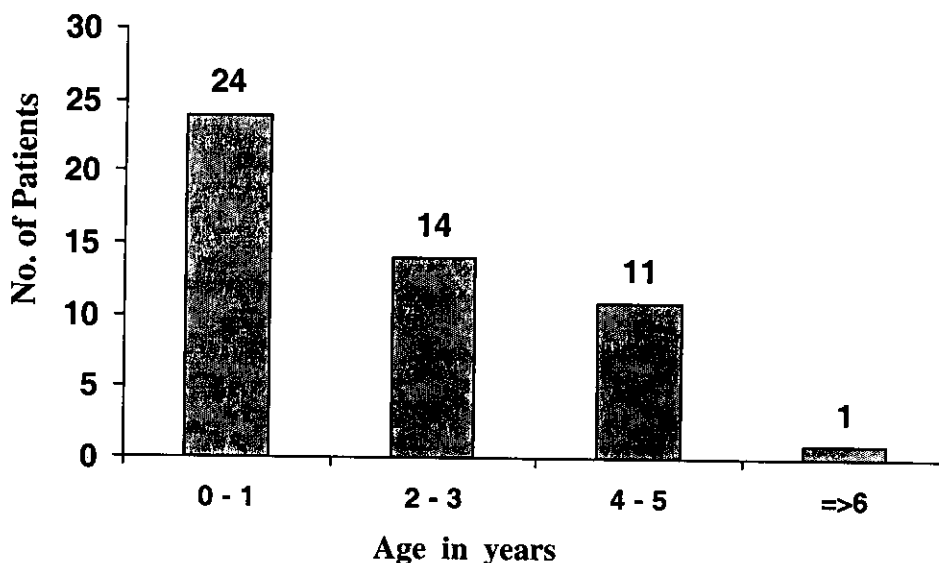


Fig. 1: Age at onset of Squint

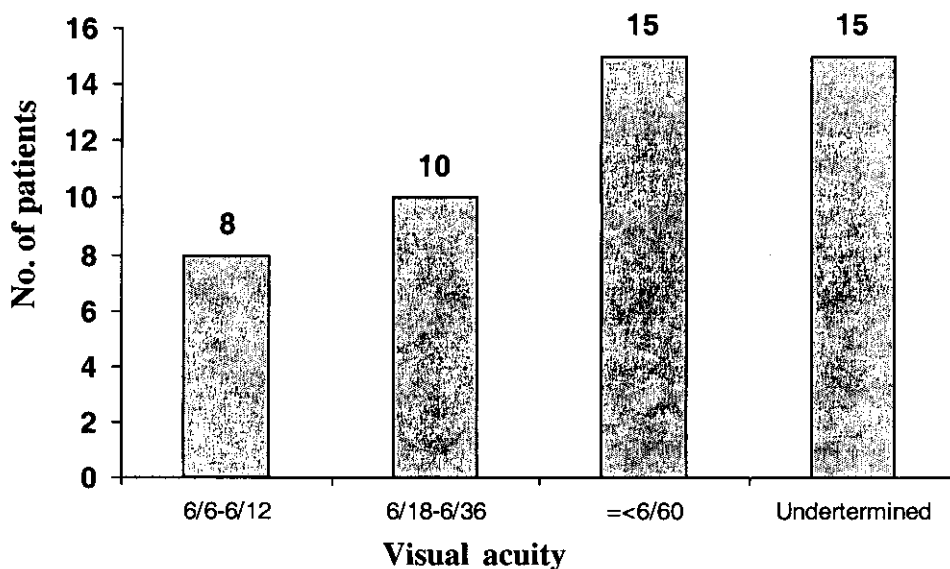


Fig. 2: Visual acuity on presentation

tant and only three (06%) children had incomitant strabismus. V-phenomena was observed in 12 (24%), out of these seven had overaction of the inferior oblique muscle. Esotropia was present in forty four (88%) of these children and six (12%) had exotropia. The esotropia was unocular in thirty one patients and was alternating in thirteen. The exotropia was unocular in two cases and alternating in four patients. The visual acuity on presentation is shown in Fig 2. Hypermetropia was the most common refractive error as appears in Fig 3. Fourteen (28%) had hypermetropia upto two dioptres, ten (20%) were between two and four dioptres, whereas thirteen (26%) of our patients had hypermetropia of more than 4 dioptres (range = +4.25 to +8.50). Amblyopia was present in sixteen (32%), which was anisometric strabismic in fourteen (28%) and true strabismic in two cases (4%). Regarding hereditary influence, refractive errors were present in five families (10%) and the same number had squint in their families. Consanguinity was present in thirty one cases (62%). There was a delay between the onset and presentation for more

than 1 yrs in 94% of patients as shown in Table 1.

## DISCUSSION

Our study of fifty cases of childhood squint confirms many features, causes and associations of the disease. In our series the majority presented late with refractory amblyopia, uncorrected hypermetropia and fairly common history of consanguinity. The male to female ratio was not significant (54:46). Majority i.e. 58% were above the age of 5 years (school going) and their vision was not checked before. For the 32%, who were above the age of 9 years, there

DELAY IN PRESENTATION

Delay in years	No. of patients	Percentage
< 1	3	6
1 - 2	18	36
3 - 5	15	30
> 5	14	28

TABLE - 1

was hardly any chance of improvement in amblyopia although the disease was noted earlier by the parents. In 26% a true infantile strabismus was noted whereas in 50% it appeared between 6 months and two years of age. In another 22% it was observed before the age of 5 years by the parents. 98% of the parents knew about the illness before their children were 5 years old but were so ignorant that 78% of cases presented after the age of 5 years. The reasons for delay in presentation were poor socioeconomic conditions and lack of public health education. Concomitant squint was seen in 94% of the cases whereas incomitant strabismus was noted in 6%. Esodeviations were noted in 88%, unocular in 62% and alternating in 26%. 12% had exodeviations, alternating in 8% and unocular in 4% cases. Duane's syndrome. Type I was seen in one case, one patient had unilateral lateral rectus palsy since birth and the mental status was not sound probably due to birth trauma or the use of contraceptives by the mother during pregnancy. AV phenomenon was seen in 24% of our patients while it is reported in 47% in esotropes and 23% in exotropes by Abbassoglu et al<sup>1</sup>. It is reported as low as 12.5% by Knapp and as high as 87.7% by Maggi. In a study of 2152 cases at Guru Nanak Eye Centre (India) it was found in 26.2% which is almost the same as in our study<sup>2</sup>. Relative frequency of the various phenomena in our series was, V-esotropia 75%, A-esotropia in 16.66%, V-exotropia in 8.33%, while the same are reported as 18%, 4.2%, 62% from India<sup>2</sup>. The difference is perhaps due to our small number of patients. Seven out of twelve patients had overaction of the inferior oblique muscle mostly in V-esotropia. The visual acuity was good in 10% patients (6/9 or better) and between 6/12 and 6/8 in 20%, between 6/24 and 6/60 in 26% and below 6/60 in 14%. In 30%, the children were too young for correct visual acuity estimation. The subnormal vision is

reported to be less than 6/12<sup>3</sup>. In this study 74% children with strabismus had hypermetropia and only 6% had myopia whereas in 20% of patients no refractive error was observed on cycloplegic retinoscopy. In 28%, the hypermetropia was not significant (< 2 dioptre). Significant hypermetropia was of 2 to 4 dioptre in 20% and above 4 dioptre in 26% cases. All of the hypermetropes had esotropia, whereas one myopic had exotropia and the remaining five exotropes had no refractive error. This is also emphasized by Abrahamssor-Metal<sup>4</sup>, in a study of 57 cases, where patients with esotropia had a pronounced hypermetropia than exotropic cases. They also noted that hypermetropia increases in the deviating eye in esotropia while the refractive error was stationary in exotropia and that anisometropia frequently developed after onset of strabismus. This relationship of esotropia to hypermetropia has also been reported by Duke-Elder<sup>5</sup>. Amblyopia, a preventable ocular malady was present in 16(32%) cases, 14(28%) had anisometropic strabismus amblyopia and strabismic amblyopia was found in 2(4%), which are also mentioned as the commonest causes by others<sup>6</sup>. Goudruffetal studied 961 cases of amblyopia in which 55% had strabismic amblyopia, 17% had anisometropic amblyopia and 27% had mixed amblyopia. Social deprivation and illiteracy were responsible for the long delay in presentation of these children. 58% of these presented late, ranging from 2 years to 15 years from the onset of the disease. Smith et al<sup>7</sup> has reported a difference of 22 months in the average age at presentation between children with anisometropic amblyopia in the most deprived and least deprived areas. 10% of families had positive history for refractive error and the same number had squint in their family. Study by Aichmair-H et al<sup>8</sup> also showed that hereditary factors had statistically significant importance. In the majority of children. In 62% history of

consanguinity was present. We could not trace the incidence of consanguinity in general population of this region for comparison. This high incidence of consanguinity is because of the unique traditional family marriages in this part of the world. We recommend that awareness of the public and educating the school health personnel along with early referral and proper management are the key points to avoid or minimize the preventable sequelae of childhood strabismus. The registration of families with general practitioners, free and easy access to them along with regular training of the doctors, lady health visitors and ophthalmic technicians working in basic health units, rural health centers and tehsil head quarter hospitals for early detection and treatment of refractive errors, squint and amblyopia are recommended. Testing of the visual status of every child before admission to school as practiced by some schools already, will cover the 70% of the age group affected by strabismus. Radio, television, newspapers, magazines and other media may be used to create public awareness about the diseases related to consanguinity.

## REFERENCES

1. Abbasoglu OE, Sener EC, Sanac AS. Factors influencing the successful outcome and response in strabismus surgery. *Eye* 1996; 10: 316.
2. Sen DK. *Strabiscopes* (India) 1995; 2(3): 21.
3. Chan-oy, Edwards-M. Refraction referral criteria for Hong Kong Chinese pre-school children. *Ophthalmic-physio-opt.* 1994; 14(3): 249.
4. Abrahamsson M, Fabian G, Sjostrand J. Refracting changes in children developing convergent or divergent strabismus. *Br J Ophthalmol* 1992; 76 (12): 723.
5. Duke Elder S; Wybar K. Abnormal ocular motility. In: Duke Elder S, Wybar K, eds. *Ocular motility and strabismus. "System of Ophthalmology"*. London: Kimpton 1973; 6: 577.
6. Woodruff G, Hiscox F, Thomson JR, Smith LK. Factors affecting the outcome of children treated for amblyopia. *Eye* 1994; 8: 627.
7. Smith LK, Thomson JR, Woodruff G and Hiscox F. Social deprivation and eye at presentation in amblyopia. *J-Public-Health-Med* 1994; 16(3): 348.
8. Alchair-H et al. Randomized field study of the aetiology of strabismus concomitants. *Wein-klin-Wochenschr* (obtained from Midline(R), Jan-Dec 1993). 1992; 104(19): 600.