Ocular disorder in children with mental retardation

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ABSTRACT

Background: Ocular problems are common in mentally retarded children. Due to population growth these problems are increasing. Prevalence rate is variable from region to region. Data on ocular problems in mentally retarded school children is lacking in this region.

Aim: The aim of the present study was to identify the ocular disorders in children with mental retardation attending special schools in a district and to study their relationship with the degree of retardation.

Materials and Methods: A total of 241 mentally retarded school children in the age group of 6-16 years attending special schools for the mentally retarded children in a district in central India were examined by a team of ophthalmologist, psychiatrist, and a resident in ophthalmology department of a medical college. Complete ocular examination was done. Ocular problems were identified and categorized according to the intelligent quotient.

Results: One hundred and twenty four children (51.45%) had ocular problems. Strabismus (10.37%) and refractive error (20.75%) were the common ocular problems seen in this study. An association was found between the severity of mental retardation and ocular problems ($P<0.005$). However, no association was seen between the severity of mental retardation and strabismus and refractive error.

Conclusion: A high prevalence of ocular problems was seen in mentally retarded school children. Children with mental retardation should undergo annual ophthalmological check up. Early detection and correction of ocular problems will prevent visual impairment in future.

Key words: Children, mental retardation, ocular disorder, refractive error, strabismus

INTRODUCTION

Vision plays an important role in the development of a child. Uncorrected vision affects the child’s performance at the various levels. It adds socio-economic burden on the family. Ocular problems are frequently seen in mentally retarded children. Visual and ocular problems are neglected in mentally retarded children.

The aim of the present study was to identify the ocular disorders in children with mental retardation attending special schools in a district in central India and to study their relationship with degree of retardation.

MATERIALS AND METHODS

The ethical committee of the hospital approved the study. The principal of the special education schools for children with mental retardation in a Nagpur district were sent a letter proposing the ocular examination of all the children. Parents were requested to be present on the day of examination. Consent was obtained from the parents for the examination of the child. The diagnosis of mental retardation was based on Diagnostic and Statistical Manual of Mental Disorders (DSM)-4 diagnostic criteria and the intelligence quotient was assessed using Binet-Kamat method by the accompanying psychiatrist.

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The team consisting of an ophthalmologist and a postgraduate in the senior residency examined all the students. Examination was done in a school. Age, sex, residential address, antenatal and perinatal history, ocular complaints, and previous refractive error were noted. Visual acuity was tested on Snellen’s chart in the language preferred by the student. Landolt’s “C”-chart was used for children who were not able to read but can interpret the symbol. Picture chart was used for more disabled children. Routine ocular examination was done on torch light in all students, oculomotility was tested using alternate cover uncover test, cycloplegic refraction, and ophthalmoscopy was performed in the indicated students. Glasses were prescribed to all children having visual acuity less than 20/30 according to the retinoscopy. Uncooperative and students needing special examination were referred to the hospital for the detailed examination. The data were entered in an excel sheet (SPSS software, 13.0, SPSS Inc. Chicago, Iilinois) and was subjected to statistical analysis. The ocular problems were categorized according to the Intelligence Quotient (IQ) score. Fisher’s exact was used to study the strength of association between ocular problems and mental retardation. An association between the common ocular problems encountered in the study and the severity of mental retardation was studied by Chi-square test for the linear trend. A \( P \) value less than 0.005 was considered significant.

RESULTS

A total of 241 school children (6-16 years of age) with mental retardation in special education schools were examined. One hundred and twenty four (51.45%) children had ocular problems.

Eighty-one students had mild mental retardation and 32 (39.51%) students had ocular problems. One hundred and fifteen students had moderate mental retardation (47.72%) with ocular problems seen in 61 students (53.04%). Students having severe mental retardation had more ocular problems (29 out of 42 (69.05%)).

The distribution of IQ scores along with the number of students having ocular problems is presented in Table 1. Refractive error (49.18%) and strabismus 11 (18.03%) were common ocular problems seen in moderate grade of mental retardation. Strabismus (24.14%), nystagmus (6.90%), and corneal dystrophy (6.90%) were common ocular problems seen in severe mental retardation. We came across three profoundly mentally retarded children. Two children had ocular problems, one child had optic atrophy and other had anophthalmos.

Myopia was a common refractive error seen in 30 (60%) students, followed by hypermetropia (n=10, 20%), and astigmatism (n=10, 20%).

Association was studied between severity of mental retardation and ocular morbidity [Table 2]. The number of students having ocular problems in profound mental retardation was small in number (2/3). They were incorporated in the severe mental retardation group for the analysis. Significant statistical association was found between the severity of mental disability and ocular morbidities \((P=0.00144)\). The risk of getting ocular morbidities among the severe and profoundly mentally retarded children was more as compared to mild mental retardation group \((odds ratio=3.39)\). However, no association was seen between the level of mental retardation refractive error \((P=0.74)\) and the strabismus \((P=0.265)\).

A stormy perinatal history was seen in 55% children.

DISCUSSION

Visual disorders are frequently seen in mentally retarded children.[1-3] The present study has found out 51.45% children had ocular problems. Refractive error and strabismus were the common ocular problems seen in the study. Myopia was the common refractive error in the study group. This correlates with the study done by Gogate et al., in Indian population.[11]

| Ocular problems | Mild - 50‑69 (% | Moderate - 35‑49 (%) | Severe - 20‑34 (%) | Profound <20 (%) |
|-----------------|-----------------|----------------------|-------------------|------------------|
| Refractive error | 13 (40.6)       | 30 (49.18)           | 07 (24.14)        | –                |
| Strabismus      | 07 (21.9)       | 11 (18.03)           | 07 (24.14)        | –                |
| Nystagmus       | 01 (3.12)       | 03 (4.92)            | 02 (6.90)         | –                |
| Corneal dystrophy| 01 (3.12)       | 01 (1.64)            | 02 (6.90)         | –                |
| Cataract        | 02 (6.25)       | 03 (4.92)            | 02 (6.90)         | –                |
| Optic-atrophy   | 02 (6.25)       | 03 (4.92)            | 01 (3.45)         | 01 (50)          |
| Congenital ocular anomalies | 01 (3.12) | 03 (4.92) | 01 (3.45) | 01 (50) |
| Retinal dystrophy | –               | 01 (1.64)            | 02 (6.90)         | –                |
| Ptosis          | 01 (3.12)       | 01 (1.64)            | 01 (3.45)         | –                |
| Vitamin A deficiency | 01 (3.12) | 01 (1.64) | 01 (3.45) | –                |
| Dacrocystitis   | 01 (3.12)       | 02 (3.28)            | 01 (3.45)         | –                |
| Chalazion       | 01 (3.12)       | 01 (1.64)            | 01 (3.45)         | –                |
| Blepharitis     | 01 (3.12)       | 01 (1.64)            | 01 (3.45)         | –                |
|                 | 32               | 61                   | 29                | 02               |

| Mental disability (I.Q.) | No. of students with ocular morbidity no. (%) | Total P value | Odds ratio |
|--------------------------|----------------------------------------------|---------------|------------|
| Mild (50-69)             | 32 (59.51)                                   | 81            | 0.00144    | 1.00       |
| Moderate (35-49)         | 61 (53.04)                                   | 115           | 1.73       |
| Severe (20-34)           | 29 (69.05)                                   | 42            | 3.39       |
| Profound (<20)           | 02 (66.67)                                   | 03            |            |
| Total                    | 124                                          | 241           |            |

IQ - Intelligence Quotient

Table 1: Distribution of ocular disorder in children with learning disability

Table 2: Association between severity of mental retardation and ocular morbidity
The highlight of the study was the significant correlation between severity of the mental disability and the ocular morbidity suggesting high risk of getting ocular problems in severely mentally retarded children. However, no correlation was seen between the level of mental retardation refractive error and strabismus. This could be due to equal distribution of refractive error in mild and moderate grade of mental disability and less student having refractive error in the severe grade of mental retardation. Strabismus was equally distributed amongst all grades of mental retardation. Such correlation was studied by Koslowe et al., in the children having Down syndrome. They have found out significant correlation between strabismus with the increased level of mental disability. However, no correlation was seen with refractive error.[4]

The onset of squint was much earlier than the general population. Eighteen children (18/25 (72%)) had onset of squint during the first 6 months of life. This could be related to the stormy perinatal history, which was seen in 55% of the children.

This was the first type of study in the region with sufficiently large sample size. The data could be useful to the governmental agency to plan and implement the national program in the region.

The cooperation from the parents was good. However, children in the grade of moderate and severe mental retardation took more time for the examination. Sufficient time was devoted for the examination of the child by all the examiners. The draw back of the study is that, only children admitted to the special school for mental retardation were examined.

CONCLUSION

We believe children with learning disability should undergo annual ophthalmic evaluation. We suggest visual function of the children should be assessed as soon as the child is admitted to the school. Earlier assessment and correction of the visual problems will have greater chance of achieving potential and will prevent unnecessary visual impairment.

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REFERENCES

1. Gogate P, Soneji FR, Kharat J, Dulera H, Deshpande M, Gilbert C, et al. Ocular disorders in children with learning disabilities in special education schools of Pune, India. Indian J Ophthalmol 2011;59:223-8.
2. Katoch S, Devi A, Kulkarni P. Ocular defects in cerebral palsy. Indian J Ophthalmol 2007;55:154-6.
3. Govind A, Lamba PA. Visual disorders in cerebral palsy. Indian J Ophthalmol 1988;36:88-91.
4. Merrick J, Koslowe K. Refractive errors and visual anomalies in Down syndrome. Downs Syndr Res Pract 2001;6:131-3.

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