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Review Article

Pediatric Cortical Visual Impairment: future epidemic?

Amit Maitreya
Associate Professor, Department of Ophthalmology, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Dehradun

***Corresponding author**
Dr. Amit Maitreya
Email: drmaitreaya@yahoo.com

Abstract: One of the common causes of pediatric cortical visual impairment is premature birth. India has the maximum number of premature birth but, unlike developed countries, cortical visual impairment is not among leading causes of bilateral visual impairment in children in India. This may be due to less awareness about this entity. This article describes in brief about pediatric cortical visual impairment.
Keywords: cortical, cerebral, visual, impairment, children

INTRODUCTION

CVI is a temporary or permanent visual impairment caused by the disturbance of any portion of both visual pathways posterior to lateral geniculate body (LGB) i.e. optic radiations and occipital cortex [1]. Child's brain is unable to analyze visual information, brought by normal anterior visual pathways. This visual impairment may be minimal to severe. Pupillary reaction remains unaffected as fibres responsible for pupillary reaction leave visual pathway before LGB.

The challenge

Incidence of prematurity is on the rise and so is the risk of two visual disorders - retinopathy of prematurity (ROP) and pediatric cortical visual impairment (CVI). Somehow ROP has been centre of attention for years but pediatric CVI is not. This may be due to the fact that in ROP, pathological lesions are visible which can be seen early but in pediatric CVI, no detectable pathology is seen in the eyes and child presents late.

Pediatric CVI is related to prematurity and is one of the leading causes of bilateral visual impairment in many developed countries [2]. India has greatest number of preterm birth but pediatric CVI is not among top causes of childhood visual impairment in India [3]. It may be the result of lack of awareness among ophthalmologist and under diagnosis of pediatric CVI in India.

DISCUSSION

Pediatric CVI occurs due to hypoxic insult to brain [4]. Among various causes of Pediatric CVI, two most important causes are perinatal hypoxia or bith asphyxia (history of late cry at birth) and prematurity [5].

In preterm births, hypoxia selectively harms the periventricular deep white matter where germinal matrix lies [4]. This is the area from where fibres of optic radiation travel. So injury can also involve these fibres of optic radiations resulting in CVI. This is the reason that CVI is more common in premature children with perinatal hypoxia.

In its simplest form, any child of decreased vision with normal anterior and posterior segment examination, having normal pupillary reaction may be a suspect. Common age of presentation is around 3 years [6]. Many of these children are wrongly diagnosed as having amblyopia but no cause of amblyopia is detectable. They are subjected to battery of investigations but to no avail and the cause of decreased vision remains unknown.

To make diagnose of pediatric CVI, detail history is important as pediatric CVI has been seen in association with prematurity, late cry after birth / birth asphyxia / perinatal asphyxia, hydrocephalus, meningitis and meningoencephalitis, antenatal infections etc. [6, 7, 8, 9]. Child may have some neurological problems like seizures [6, 9].

Ocular examination of these children needs special skill. Huo *et al.;* has given very good method of assessing vision in these children of CVI [9]. Their method of vision assessment in Pediatric CVI is simple, quick, practical and can be done in OPD by ophthalmologist himself. Children with CVI have variable visual behavior – vision varies in different days and in different times of a day so they may require multiple visits for vision assessment [10]. They have many other peculiar visual behavior like difficulty in trying to pick a toy from many toys, problem in appreciating a distant object / object in crowd, wrong identification of stranger people (identify them as known person), unable to recognize family members, difficulty in reading small print etc. [11]. Any combination of these visual behaviors may be present in a child with CVI.

Investigation of choice in a suspected case of pediatric CVI is MRI brain. Many of these children will have imaging signs suggestive of hypoxia like periventricular leukomalacia.

Prevention is the best way to decrease pediatric CVI. There is no cure. Rehabilitation is simple and very helpful for these children as well as parents. Few simple tricks can be explained to parents like simple visual environment, no complex colour pattern or design in toys, use of simple and high contrast objects (e.g.: red cup with white table cover), avoidance of crowded places etc. Parents and teachers should understand the different visual behavior of such children and should not consider it as a sign of disrespect. In fact management of children with CVI requires special and dedicated clinic which incorporates many more interventions for these children and education for parents.

CONCLUSION:

Whenever an ophthalmologist is suspecting amblyopia, but unable to find a cause of amblyopia, he/ she should always think of CVI, more so in a case with history of premature birth and/or late cry at birth. As India has maximum number of premature births, it may have lots of children with CVI in near future.

REFERENCES

1. Levin LA; Topical diagnosis of chiasmal and retrochiasmal disorders. In: Miller NR, Newman NJ, Biousse V, Kerrison JB, editors. Walsh and Hoyt's Clinical Neuro-Ophthalmology. 6th ed. Baltimore: Lippincott Williams and Wilkins; 2005; 503-573.
2. Durnian JM, Cheeseman R, Kumar A, Raja V, Newman W, Chandna A; Childhood sight impairment: a 10 year picture. Eye (Lond). 2010; 24(1):112-7.
3. Blencowe H, Cousens S, Oestergaard MZ, Chou D, Moller AB, Narwal R *et al.;* National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systemic analysis and implications. Lancet. 2012; 379(9832):2162-72.
4. Edmond JC, Foroozan R; Cortical visual impairment in children. Curr opin ophthalmol. 2006; 17(6):509-12.
5. Good WV, Hou C, Norcia AM; Spatial contrast sensitivity vision loss in children with cortical visual impairment. Invest Ophthalmol Vis Sci. 2012; 53(12): 7730-4.
6. Khetpal V, Donahue S; Cortical visual impairment: etiology, associated findings, and prognosis in a tertiary care setting. J AAPOS. 2007; 11(3): 235-9.
7. Chong C, Dai S; Cross sectional study on childhood cerebral visual impairment in New Zealand. J AAPOS. 2014; 18 (1): 71-4.
8. Van genderen M, Dekker M, Pilon F, Bals I; Diagnosing cerebral visual impairment in children with good visual acuity. Strabismus. 2012; 20 (2): 78-83.
9. Huo R, Burden SK, Hoyt CS, Good WV; Chronic cortical visual impairment in children: aetiology, prognosis, and associated neurological deficits. Br J Ophthalmol. 1999; 83(6):670-5.
10. Jan JE, Groenveld M, Sykanda AM, Hoyt CS; Behavioural characteristics of children with permanent cortical visual impairment. Dev Med Child Neurol. 1987; 29(5): 571-6.
11. Dutton GN, Jacobson LK; Cerebral visual impairment in children. Semin Neonatol. 2001; 6(6): 477-85.