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TORCH PROFILE IN COCHLEAR IMPLANTATION

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ABSTRACT

BACKGROUND: Early childhood torch infections are the important risk factor for severe to profound SNHL. To emphasize the importance of torch screening in infants and pregnant women could prevent and early identification of progression of hearing loss.

OBJECTIVE: The aim of study is to find the role of TORCH ((toxoplasma, rubella, cytomegalovirus, and herpes simplex) infection and screening in children with bilateral profound SNHL in comparison with normal hearing children.

METHOD: TORCH screening done in 122 patients with bilateral profound SNHL(cases) who underwent cochlear implants beween 2017 t0 2019 at Madurai Medical College &Govt.Rajaji Hospital, Madurai as well as 122 children with normal hearing(control) was conducted. Age group of both group was between 1 to 6 years. TORCH antibody status of both groups was compared.

RESULT: From 122 patients, 32(26%) were positive for Rubella virus IgG antibody, 26(21%) positive for cytomegalovirus (CMV) IgG antibody and 11(9%) were positive for herpes simplex virus IgG antibody, , 14(11%) were positive for Rubella virus IgM antibody, 9(7.3%) positive for cytomegalovirus (CMV) IgM antibody and 2(1.6%) were positive for herpes simplex virus IgM antibody,

CONCLUSION: From the above study it was evident that TORCH infections in test group is higher than control which suggests past history of TORCH infections during childhood as most important etiology of SNHL.

KEYWORDS :

INTRODUCTION:

The acronym TORCH stands for (Toxoplasma,Rubella, Cytomegalovirus, Herpes Simplex) There are various etiological causes for childhood hearing loss either congenital or acquired infection. Of the various etiology Rubella and CMV have significant role in leading cause of congenital childhood hearing loss. Viruses have a role in sensorineural hearing loss however HIV infecton leads o Conductive hearing loss. Around 466 million people worldwide having disabling hearing loss, 34 million are children. In 2050 over 900 million people will have disabling hearing loss.

CAUSES:

CONGENITAL CAUSE:

Maternal rubella, Syphilis, LBW, Birth asphyxia Ototoxic drugs during pregnancy ,Jaundice

ACQUIRED CAUSE:

Infection- Meningitis, Measles, Mumps, Chronic ear infection, Otitis media Neonatal infection Ototoxic drugs, Excessive noise Trauma, Aging

In children less than 15 yrsof age, 60% of hearing loss is attributable to preventable cause.

Immunizing children for Measles/ Mumps/ Rubella/ Herpes. Immunizing adolescent girls for Rubella.

Table -1– Viral causes of hearing loss

Viruses	Type of HL	Degree of HL	Incidence of HL	Prevention	Treatment
Congenital CMV	Bilateral progressive SNHL	Severe	6-23% if asymptomatic; 22-65% if symptomatic	None	Ganciclovir, valganciclovir, cidofovir, foscarnet
Rubella	Bilateral SNHL	Mild to severe	12-19%	MMR	None
LCMV	Bilateral SNHL	Severe to profound	7.4%	Avoidance of exposure	Ribavirin, favipiravi
Congenital and acquired HIV	SNHL, CHL, mixed	SNHL: mild to moderate CHL: mild to maximal	27.5-33.5%	Post exposure	HAART
HSV	Unilateral or Bilateral SNHL	Moderate to profound	Upto 33% CONGENITAL	None	Acyclovir
Acquired measles	Bilateral SNHL	Profound	0.1-3.4% MMR,IV Ig None	MMR,IV Ig	None
VZV	Unilateral SNHL	Mild to moderate	7-85%	Zostavax	Acyclovir, prednisolone
Mumps	Unilateral SNHL	Variable	0.005-4%	MMR	None
WNV	Bilateral SNHL	Mild to profound	Rare	Vaccine in trials	None

METHADOLOGY:

The study conducted at Madurai medical college from 2017 to 2019, all these congenitally deaf children are evaluated and planned for cochlear implantation at later stage. As a preliminary investigation TORCH screening done for all children with deafness in age group of 1 to 6 years and in the control group children with normal hearing. Apart from TORCH screening, CT/MRI, OAE, BERA are done.

RESULTS:

Amongst all 122case of SNHL, 15 cases have neonatal jaundice, 18 cases were difficult labour, 11cases were LBW and others have some significant past history. No patient was having any active infection or medical disease during the time of study. Out of 122 cases 32(26%) were positive for Rubella IgG,26 (21%) positive for CMV IgG, 11(9%) positive for HSV IgG, 14(11%) positive for Rubella IgM, 9(7.3%) for CMV IgM, 2(1.6%) for HSV IgM.

In control group of 122 screened children 9(7%)positive for Rubella IgG, 3(2.5%) positive for CMV IgG, 3(2.5%) positive for HSV IgG. No cases reported positive for Toxoplosmosis. 2 (1.6%) positive for Rubella IgM. Other infections like CMV, HSV, Toxoplasma IgM are nil.

Table 2– TORCH IgG titre of Cases

TORCH	TOTAL	POSITIVE	%
RUBELLA	122	32	26
CMV	122	26	21
HSV	122	11	9
TOXO	122	0	0

Table 3– TORCH IgG titre of Control

TORCH	TOTAL	POSITIVE	%
RUBELLA	122	9	7.3
CMV	122	3	2.5
HS	122	3	2.5
TOXO	122	0	0

Table 4 – TORCH IgM titre of Cases

TORCH	TOTAL	POSITIVE	%

RUBELLA	122	14	11
CMV	122	9	7.3
HSV	122	2	1.6
TOXO	122	0	0

Table 4 – TORCH IgM titre of Control			
TORCH	TOTAL	POSITIVE	%
RUBELLA	122	2	1.6
CM	122	0	0
HSV	122	0	0
TOXO	122	0	0

DISCUSSION:

In this study, etiology of SNHL, congenital rubella infection associated with higher number of severe cases of SNHL when compared to control group. IgG titre signifies past infection. TORCH screening done in single time in all the cases and control group and hence the actual time of infection is not determined. There may be presence of maternal IgG transferred during pregnancy.

Majority of cases would have been infected either interaction during labour or immediate post natal period which leads to severe to profound SNHL. TORCH induced deafness occurs before 2 years of age.

In our study, Toxoplosmosis was not noted both in cases and control groups. The higher incidence of Rubella infection induced hearing loss is actually due to Infection rather than immunization as Rubella vaccination is not included in UIP in India.

CONCLUSION:

Retrospective analysis of etiology of SNHL directly demonstrate that congenital TORCH infections particularly Rubella and CMV are responsible for higher rates of early childhood SNHL.Infants are at the risk of development of late-onset CMV associated SNHL and hence the vaccination against CMV in future prevent the progression of degree of hearing loss. Rubella and MMR vaccnaton should be given in all women of child bearing age group. This has to be scheduled in UNIVERSAL IMMUNIZATION PROGRAMME. Though TORCHscreening is not useful for management of deaf child, if the TORCH screening was performed early then that could be better prevention &management of childhood deafness

REFERENCES

1. Nahmias AJ, Josey WE, Naib ZM, Freeman MG, Fernandez RJ, Wheeler JH. Perinatal risk associated with maternal herpes simplex infection. Am J Obstet Gynecol 1971;110:825-37.
2. Richard J H Smith, James F Bale Jr, Karl R White. Sensorineural hearing loss in children. Lancet 2005; 365: 879–90.
3. Brandon E. Cohen, Anne Durstenfeld and Pamela C. Roehm. Viral Causes of Hearing Loss: A Review for Hearing Health Professionals. Trends in Hearing 2014, Vol. 18: 1–17
4. Boppana SB, Fowler KB, Vaid Y, et al. Neuroradiographic findings in the newborn period and long-term outcome in children with symptomatic congenital cytomegalovirus infection. Pediatrics 1997; 99:409–14.
5. Reddy MVV, Bindu HemaL, Reddy PP, Rani UshaP Role of intrauterine Rubella infection in the causation of congenital deafness. Indian Journal of Human Genetics, Vol. 12, No. 3, September-December, 2006, pp. 140-143
6. Shet A. Congenital and perinatal Infections: Throwing new light with an old TORCH. Indian J Pediatr 2011;78:88-95.
7. Whitley RJ, Cloud G, Gruber W, Storch GA, Demmler GJ, Jacobs RF, et al. Ganciclovir treatment of symptomatic congenital cytomegalovirus infection: Results of a phase II study. J Infect Dis 1997;175:1080-6
8. Pass RF. Congenital cytomegalovirus infection and hearing loss. Herpes 2005; 12:50–5.
9. Barbi M, Binda S, Caroppo S, Ambrosetti U, Corbetta C, Sergi P. A wider role for congenital cytomegalovirus infection in sensorineural hearing loss. Pediatr Infect Dis J 2003; 22:39–42.
10. Hall CB, Caserta MT, Schnabel KC, et al. Congenital infections with human herpesvirus 6 (HHV6) and human herpesvirus 7 (HHV7). J Pediatr 2004; 145:472–7.
11. Yamanishi K. Human herpesvirus 6 and human herpesvirus 7. In: Knipe DM, Howley PM, eds. Fields virology. 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2001:2785