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Association of TORCH Infection in Bilateral Profound Hearing Loss: A Study of 164 cases at CI Centre, CMH, Dhaka

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Abstract : We aimed to investigate the incidence and most frequent syndrome among TORCH infected patients in the cochlear implant program and serves as sampling material for future preventive public health care actions. Total 164 participants in this study. The study was conducted on bilateral prelingual profound congenital deaf patients who had TORCH syndrome in CMH Dhaka, test results were collected from the patient's file. Total patients were 164 (100%). Among them, 68 (41.46%) persons found TORCH positive and 96 (58.54%) persons found negative and the highest frequency found in Cytomegalovirus 42.18% and lowest frequency found in Others 3.12%. Besides, investigators found 29.68% Rubella, 21.43% in Herpes simplex virus 15.62% and 9.37% in Toxoplasmosis. We therefore, make an effort to find out the prevalence and the importance of these infections during pregnancy to reduce the risk of congenital profound hearing loss.

IndexTerms - TORCH, Bilateral Profound Hearing loss, Cytomegalovirus, Prelingual deaf.

I. INTRODUCTION

TORCH Syndrome alludes to infection of a developing fetus or newborn by any of a group of infectious agents. The abbreviation of "TORCH" is (T)oxoplasmosis, (O)ther Agents, (R)ubella (also known as German Measles), (C)ytomegalovirus, and (H)erpes Simplex. Infection with any of these agents may cause a group of symptoms of comparable side effects in influenced infants. Pediatric hearing loss is a general classification that covers a wide scope of pathologies. The hearing loss can be classified as sensorineural hearing loss (SNHL), conductive hearing loss (CHL), and mixed hearing loss (MHL)[1]. Hearing loss can likewise be portrayed by congenital and acquired population.

Congenital anomalies (birth defects, congenital disorders or congenital malformations) are a structural or functional anomaly (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally at birth and later in life. Infection with *T.gondii* is acquired through meat and meat products.[2] It is transmitted to humans through the infection of food or water contaminated with cat faces or eating undercooked meat.[3] Rubella is also known as German measles. Beyond the first 12 weeks of gestation, fatal organogenesis is nearly complete, and deafness may be the only consequence in the infected infant.[2] Cytomegalovirus is a leading cause of congenital infections and long-term neurodevelopmental disabilities among children. It is a common herpes virus infection which is spread through sexual and nonsexual contact with body secretions. [3] The herpes simplex virus, also known as HSV, is an infection that causes herpes. Herpes can be seen in various parts of the body, most commonly on the genitals or mouth. Oral herpes is generally responsible for cold sores and fever blisters around the mouth. Genital herpes is generally responsible for genital herpes outbreaks. [4] TORCH infection in early life can establish risk factors for severe to profound sensorineural hearing loss. In that case, Cochlear Implantation is the best solution for the pediatric patient. For SNHL patients CI is effective and now people are finding interest in CI surgery. CIs have been accepted as a safe and effective treatment for treating patients with moderate to extreme hearing loss with minimal benefit from hearing aids.[5]

II. AIM

The goal of the study was to investigate the incidence and most frequent syndrome among TORCH infected patients in the cochlear implant program and serves as sampling material for future preventive public health care actions.

III. OBJECTIVE:

1. To find out the incidence of TORCE syndrome in bilateral profound hearing loss patients.
2. To assess the leading syndrome within TORCH among the patients of bilateral hearing loss.

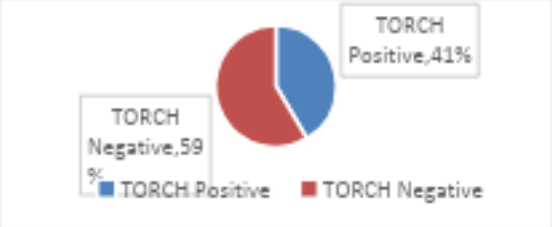
IV. METHOD:

Total 164 participants in this study. The study was conducted on bilateral prelingual profound congenital deaf patients who had TORCH syndrome in CMH Dhaka. The purposive sampling procedure was used to determine the study. All of the data was included in Microsoft Excel and some of them were collected from the patient files. Each of the test results was collected from the blood sample of the patient and interpreted through their test procedure. It was a case-control study, so primarily pre-operative test results were collected from the patient's file. All of the test results were done before the implantation and we collected all data from the patient's file and CI center recorded Excel file of Dhaka CMH as secondary data. All the tests were performed by trained professionals of that field in the regular procedure. In this study we use to illustrating descriptive data by bar charts, and Pie charts. In this paper, SPSS V22 software has been used for the statistical analysis and validation of the data.

V. RESULT:

01. Incidence of TORCE syndrome

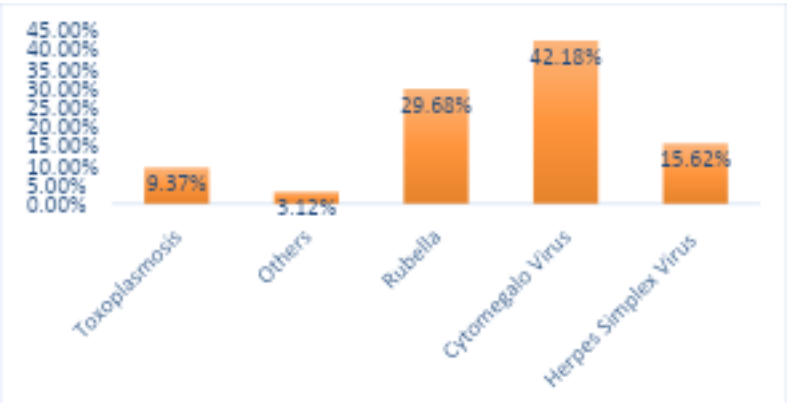
TORCH Positive	TORCH Negative
68	96



This figure and table show the percentage of TORCH positive and negative among bilateral profound hearing loss patients. Total patients were 164 (100%). Among them, 68 (41.46%) persons found TORCH positive and 96 (58.54%) persons found negative.

02. The leading syndrome within TORCH

Toxoplasmosis	6
Others	2
Rubella	19
CMV	27
Herpes Simplex	10



This figure and table indicate the frequency of TORCH syndrome among bilateral profound hearing loss patients. The highest frequency found in Cytomegalovirus 42.18% and lowest frequency found in Others 3.12%. Besides, investigators found 29.68% Rubella, 21.43% in Herpes simplex virus 15.62% and 9.37% in Toxoplasmosis.

VI. DISCUSSION:

All the prelingual bilateral profound deaf children patients tested TORCH before CI but all of them did not find TORCH positive. In this study found 68 patients among 164 found TORCH positive which is 41.46% and 96 found negative and it's 58.54%. It indicates that among all the patient's positive outcome of TORCH is less than the negative.

In this study the highest frequency found in Cytomegalovirus 42.18%. According the previous research Cytomegalovirus is estimated to be the leading environmental cause of childhood hearing loss, accounting for approximately 15%-21% of all hearing loss at birth in the United States.[6] Investigators found 29.68% Rubella, in a Brazilian study, congenital rubella was thought to be the cause of hearing loss in 32% of patients with deafness.[7] In this study Herpes simplex virus found in 15.62%, a survey among Soudi children state that about 8% hearing loss caused by HSV.[8] So previous reports support this research.

VII. CONCLUSION:

In Conclusion the prevalence of Cytomegalovirus infection is high among TORCH infections and have high rate of hearing loss than others. It is possible that the prevalence of these infections may be increased in Dhaka, Bangladesh due to lack of awareness, cultural limitation, and mostly people are reluctant to visit to doctors during pregnancy. We therefore, make an effort to find out the prevalence and the importance of these infections during pregnancy to reduce the risk of congenital profound hearing loss.

REFERENCES

[1] Dimitrov L, Gossman WG. Pediatric Hearing Loss. Published online October 2019.
[2] Al Sabellha R, Hager A. The value of TORCH screening in children with bilateral profound sensorineural hearing loss. Indian Journal of Otology. 2012;18(2):62. doi:10.4103/0971-7749.100696
[3] Asthana SP, Macpherson CNL, Weiss SH, et al. Seroprevalence of Toxoplasma gondii in pregnant women and cats in Grenada, West Indies. J Parasitol. 2006;92(3):644-645. doi:10.1645/GE-762R.1
[4] Healthline. 2020. Herpes Simplex. [online] Available at: <https://www.healthline.com/health/herpes-simplex> [Accessed 27 July 2020].
[5] Del Pizzo J. Focus on diagnosis: Congenital infections (TORCH). Pediatr Rev. 2011;32(12):537-542. doi:10.1542/pir.32-12-537
[6] Morton C, Nance W. Newborn Hearing Screening — A Silent Revolution. New England Journal of Medicine. 2006;354(20):2151-2164. doi:10.1056/nejmra050700
[7] Da Silva LPA, Queiros F, Lima I. Etiology of hearing impairment in children and adolescents of a reference center APADA in the city of Salvador, state of Bahia. Braz J Otorhinolaryngol. 2006;72:33–36. doi: 10.1016/S1808-8694(15)30031-8.
[8] Al Muhaimeed H. Hearing loss and herpes simplex. J Trop Pediatr. 1997;43(1):20-24. doi:10.1093/tropej/43.1.20