ORIGINAL ARTICLE

Clinical Evaluation of Hearing- impaired Children: Study on 169 cases

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Abstract :

A prospective study of 169 children when compliments of possible hearing loss who attend to ENT OPD of Holy Family Red Crescent Medical College Hospital within the period of July 2010 - June 2013 at the age between 2-5 years. Among the children 102 (60%) were diagnosed having hearing loss. Male and female ratio was 1.3:1. Large age group was between 2-3 yrs. Measles (18.37%) was the leading childhood infection, exposure to passive smoking (52.63%). Birth history evalution showed foctal deshur (33.13%), low apger score (24.26%), hyperbilirubinemia (52.66%). Physical examination revealed variety of finding including small (7.10%) and long (5.33%) stature, persistent otorrhoea (11.24%), and cleft lip (5.32%), cleft platate (3.55%). Sensorineural (74.53%) and conductive (25.47%) type of deafness was found.

Introduction:

The identification and treatment of hearing loss in infants is a priority for all health care professionals especially who are involved with the patients. The critical period between birth and 5 years of age when children's speech, auditory pathways, and emotional bonds to family members is the period when hearing loss may be most detrimental[1]. Communication is an interactive process and infants influence the entire family by the way they respond to information from others. In some respects, social interaction between parents and infants may be more important for the development of communicative skills than the physiology of speech and hearing. Nevertheless, the identification of hearing impairment early in life affords the best opportunity to influence family interaction positively. Prompt diagnosis and therapy of child hood hearing loss all will allow affected children to participate in mainstream educational programs and ultimately to acquire improved language skills.

Most children report to physicians for evaluation of hearing loss after being identified by family members when they are concerned about poor speech development or inattentiveness.

The study analyzed 169 cases of children with possible hearing loss about their clinical presentation, to determine if a hearing loss

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exists, establish a possible etiology for any hearing loss, screening for associated anomalies

Materials and method :

This study based on 169 cases of children who were brought by family members due to poor development of speech with possible hearing loss to ENT outdoor department of Holy Family Red Crescent Medical College Hospital from July 2010 to June 2013.

Age of the patient ranged from 2 to 5 yrs, both male and female child. This study was based on careful history, clinical examination and relevant laboratory investigation.

Result :

Table - I : Age distribution (N=169)

Age group	Number	Percentage
2 - 3 yrs	83	49.1
3+ - 4 yrs	51	30.2
4+- 5 yrs	35	20.7

Table - II : Relevant medical history

Childhood infection	Number	Percentage
Measles	31	18.34%
Mumps	08	4.70%
Meningitis	02	1.18%
Bacteremia	06	3.55%
H/O exposure	**Number**	**Percentage**
Day care center	02	1.18%
Passive smoking	89	52.63%
Formula feeding	62	36.69%

The incidence of hearing loss was present in 102 patients (60%) out of 169 children. There were 76 (74.53%) children suffered from sensory-neural deafness and 27 (25.47%) from conductive deafness.

Table - III : Findings Related to birth

Antenatal complication		
Pre Eclampsic Toxemia	26	15.38%
Gestational DM	15	8.89 %
Ante partum Hemorrhage	12	7.10 %
Thyroid disorder	09	5.32%
Drugs in pregnancy		
Antimalarial	01	
Isotretinen	02	
During delivery		
Gestation age at delivery	27 (Preterm term)	135 (term) 5 (Post term)
Duration of labour	129 (<10hrs)	40 (> 10hrs)
Foetal distress	56	
Mode of delivery	37 (C/S)	132 (NVD)
Post natal finding		
Low apar score	41	24.26%
Miconium aspiration	08	4.73%
Need for endotracheal intubation	02	1.8%
Neonatal complication		
Hyperbilirubinemia	89	52.66%
Rh incompatibity	01	
Requiring for mechanical ventilation	02	

Table -IV : Physical examination findings

Stature (according to age)		
Small	12	7.10%
Long and thin	09	5.33%
Skin		
Albinism	01	
Vitiligo	02	
Ear		
Microtia	03	
Low set ear	01	
Periauricular pits	01	
Aural atresia	01	
Persistent otorrhoea	19	11.24%
Eye		
Abnormal position	01	
Stabismus	02	
Discoloration of cornea	01	
Oral Cavity		
Cleft lip	9 (operated 6)	5.32%
Cleft platate	6 (operated)	3.55%
Face		
Mandibular hypoplasia	01	
Microgthania	02	
Broad nasal root	03	

Discussion :

Children (2-5yrs) attended ENT OPD with suspected hearing loss constitutes 169 cases. Out of them 102 were diagnosed as the case of possible hearing loss (60%). Among the patient majority were male (57.99%) than female (42.01%). The male female ratio was 1.3:1. The commonest age group was from 2-3 yrs (49.1%). Approximately 5% -10% of child within

hearing disorder are not detected initially as the number of false positives is related to the method of screening and to the age of the child when the test was performed. Therefore, children at risk deserve special attention because 1% to 3% will have significant bilateral Sensorineural Hearing Loss.

Regarding children infection, measles was the commonest of all infection (18.38 %). Mumps baeteremia had significant incidence. Exposure to other children at day care facilities, passive smoking exposure, formula feeding are the risk factors for middle ear disease which may lead to hearing loss.

Antenatal maternal complication include PET (15.38 %) GDM (8.88 %), APH (7.10%) thyroid disorder (5.32 %). Gestational diabetes is associated with congenital hearing loss. Although not directly related to congenital hearing loss, gestational hypertension and pre-eclampsia may have deleterious effects on the developing auditory system[5,6,7]. Prenatal use of certain medications such as antimalarials, aminoglycosides or isotretinoin may result in central or peripheral auditory system injury[8].

Well known risk factors for hearing impairment in neonates are a birth weight - less than 1500gm, in utero infections, hyperbilinubinemia (52.66 %) the incompatibility, low apgar scores (24.26 %). In this study it was difficult to find out the exact birth wight of the children so we categories it by taking gestation age at birth. Here preterm delivery was (15.97 %). Here on physical examination, there short stature (7.10 %) long & thin (5.33 %) was found. Persistent otorrhoea (11.24%) was detected, which indicated chronic otitis media that could alter bastine hearing substantially9. We found albinism in 01 case and vertiligo in 2 cases.

There are may types of skin and hair changes that may associated with sensorineural and conductive hearing loss, such as leopard syndrome. Wagrdenburg's syndrome, apert's syndrome. But those are rare in our country. Here cleft lip (5.32 %) and cleft plalate (3.55%) was found. Both of these conditions are associated with conductive type of deafness10. In this study, we found sensorineural (74.53%) and conductive (25.47%) type of deafness. Which is similar to other studies[11, 12, 13].

There is no standard laboratory protocol that is used to screen for associated disorders in children with hearing loss or to identify etiology of the loss. A variety of laboratory protocols have been proposed to evaluate children8,9,10,12. Here we suggested CBC, PBF, renal function, screening for syphilis (FTA-ABS), TORCH pannel etc. Neuroradiographic imaging is less practical in children compared to older because they require sedation.

Conclusion :

There is no uniform protocol for the referral of the affected child with hearing loss to particular specialist. But together with ophthalmologist, speech therapist, clinical geneticist, pediatric neurologist etc - a collaborative approach is necessary to enumerate risks and provide therapy for the child with a hearing loss. Early identification and rapid rehabilitative intervention are the two key elements that will give a child the best chance to develop normal speech.

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