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Original Research Article

Clinical profile of hearing loss among school going children in South Kashmir: A hospital based study

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Abstract

Background: Children with hearing impairment often experience delayed development of speech and cognitive skills, which may result in learning difficulty, therefore early detection and treatment of childhood hearing loss is crucial.
Aims and Objectives: To estimate the pattern of hearing loss in school going children presenting in our institution and to estimate the burden of disease for rehabilitation of children with hearing impairment.
Materials and Methods: A longitudnal cross- sectional observation study was conducted for a period of 1 year from 1st April 2023 to 31st March 2024in GMC Anantnag. All the children of school going age (5-18) who present with ear diseases and hearing impairment in outpatient department were registered for study with proper consent. The detailed history related to disease and detailed ENT examination were done and tabulated. Pure tune audiometry and higher function testing were done when needed and documented.
Results: The study involved 87 patients with hearing loss, with 42.5% being boys and 57% being girls. The incidence varied among age groups (5-9), (10-14) and (15-18) years with 26.6%, 44.8%, and 28.7% of cases . Out of 87 patients with Hearing Loss (84%) had CHL, (16%) had SNHL. Of these, 74.7% had bilateral hearing loss, 54% had right-sided unilateral hearing loss, and 15% had left-sided unilateral hearing loss. The majority of patients had CSOM, 25.20% had wax, 17.20% had OME, 14.90% had ASOM, 8% had Otitis Externa, and 3.40% had trauma and functional issues. 39% had surgical management, 40% had medical management, 20.6% had wax removal, 5.7% lost to follow-up, and 15% received hearing aids.
Conclusion: Early detection of disease and health educational training, awareness programs of the disease for school going children and parents is needed to reduce the prevalence and burden of the disease.

Keywords: Childhood hearing loss, School going children, Chronic Suppurative Otitis Media

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1. Introduction

Hearing impairment is a significant cause of disability worldwide, and more than two-thirds of the population with hearing impairment live in developing countries. Worldwide, 466-million people are living with disabling hearing loss and 34 million are children. If the current trend continues, estimated that by 2050, over 900-million people will have hearing impairment. According to the World Health Organization (WHO), 60% of childhood hearing impairment is preventable.[1]

The burden of hearing impairment in developing countries is due to Overcrowding, poor hygiene, socio-economic status, lack of resources to avail medical facilities, poor medical awareness. The genetic characteristics have their bearing on the incidence of hearing loss also. Hearing loss (HL) in children has a detrimental effect on academic achievement and acquiring language skills. Children with hearing impairment often experience delayed development of speech and cognitive skills, which may result in slower learning and difficulty in progressing at school. The level and type of hearing impairment and the age of onset, especially if it begins before the age when speech normally develops also has an impact on the child's speech, language, education and

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social integration. Early detection and treatment of childhood HL is crucial since inadequate auditory input in early life is associated with irreversible deficits in speech and language acquisition, cognitive development, and social-emotional function.[1,2]

Hearing impairment in children is defined as when the hearing loss measure (decibels hearing level) is greater than 30 decibels hearing level (dB HL) in the better hearing ear.

However, various studies use the normality criteria which range from 20 to 40 dB.[3] Conductive losses are amenable to timely intervention by conservative or surgical measures. Sensorineural hearing loses have guarded prognosis and limited choice. The mainstay of management in Sensorineural hearing impairment is fitting of hearing aids followed by auditory training at the earliest possible stage. Cochlear implant can be reserved for those children who get no benefit from conventional amplification after a minimum one year closely supervised trial accompanied by an intensive aural rehabilitation programme.[4,5] Awareness of the causes of deafness helps to identify high risk groups and assists in the planning of programmes for prevention or reduction of deafness in these groups.

The major cause for hearing impairment is otitis media, which is second only to common cold as a cause of infection in childhood. Respiratory tract symptoms such as cough, sore throat, and earache are also frequently seen in children. Incidence of this disease is the higher in developing countries, especially among the lower socioeconomic society because of malnutrition, overcrowding, poor hygiene, inadequate health care, and recurrent upper respiratory tract infection.[6,7] Hearing impairment and preventable ear diseases are important health problems among children in India as well with prevalence of ear diseases to be 11.3%.3 The etiology and duration of otitis media lead to a sequelae of disorders such as acute suppurative otitis media (ASOM), chronic suppurative otitis media (CSOM) and otitis media with effusion (OME). ASOM an acute form of OM, characterized by inflammation and the presence of fluid in the middle ear includes symptoms such as otalgia, irritability or fever.[7,9]

South Kashmir in Jammu and Kashmir is rural area district with adjacent catchment area of low socioeconomic status, poor hygiene, and lack of specialist medical facilities which poses a higher risk of infective ear diseases and delayed diagnosis of correctable hearing loss in children. With current clinical observation practice the rising trend of cases has added burden of childhood hearing impairment in society for rehabilitation. The study is planned to do a comprehensive analysis of the magnitude of hearing impairment in children to inform policymakers, program planners, as well as concerned service providers to place more emphasis on childhood hearing impairment in rural areas of Indian states.

Table 1: Sex distribution of cases

Sex	Total number	Incidence
Boy	37	42.50%
Girl	50	57%

Table 2: Type of hearing loss

Type	Number	Incidence
Conductive	73	84%
Sensorineural	14	16%

Table 3: Age distribution of cases

Age Distribution	Total Number	Incidence
5 TO 9	23	26%
10 TO 14	39	44.80%
15 TO 18	25	28.70%

Table 4: Type of lesion among cases

Type of lesion	Number	Incidence
Wax	18	20.6%
Asom	13	14.90%
Ome	15	17.20%
Csom	28	32.10%
Trauma	3	3.40%
Functional	3	3.40%
Otitis externa	7	8%

Table 5: Laterality of disease

Laterality	Number of cases	Incidence
Unilateral (right)	24	27.50%
Unilateral (left)	13	15%
Bilateral	47	54%

Table 6: Modalities of treatment

Treatment modalities		Number of case	Incidence
Wax removal		18	20.6%
Medical		35	40%
1	Hearing aid	13	15 %
Surgical		34	39%
1	Tympanoplasty	16	47%
2	Cortical Mastoidectomy	3	9%
3	Modified Radical Mastoidectomy	9	26.40%
4	Grommet Insertion	6	18%

2. Aims and Objective

1. To estimate the pattern of hearing loss in children presenting in our institution.
2. To study the various clinic pathological aspect of hearing impairment in children.
3. To estimate the burden of disease for rehabilitation of children with hearing impairment.

3. Materials and Methods

A longitudinal observation study was conducted for a period of 1 year, 1st April 2023 to 31st March 2024 in GMC Anantnag. All the children of school going age (5-18) who present with ear diseases and hearing impairment in outpatient department were registered for study with proper consent. The detailed history related to disease and detailed ENT examination were done and tabulated. After clinical assessment the causative factors for hearing loss like infective and non-infective, congenital, and other acquired causes will be determined. Pure tune audiometry and higher function testing when needed will be done and documented. A detailed structured, pretested, and pre-coded questionnaire will be used.

3.1 Inclusion criteria

1. Children in the age group of 5-18 years
2. Analysis of pattern of hearing loss by PTA in patients.
3. Clinical diagnosis of ASOM, CSOM, Otitis Externa, congenital deformity or congenital hearing loss and other conditions

3.2 Exclusion Criteria

1. Patient in the age group less than 5 years or more than 18 years
2. Consents not obtained

3.3 Plan of analysis

All the study subjects will be subjected to detailed history of onset and duration of hearing loss and its impact on social and educational prospect of life. History of antenatal, postnatal period, hospital admission at birth for low birth weight, hyper bilirubinemia, meningitis and other cause, History regarding any discharge from the ears, history of deafness or any other relevant history will be taken. History regarding predisposing/contributing factors and socioeconomic status will be documented. Detailed clinical ear nose throat (ENT) examination will be done. Otoscopic examination will done and record of pathology found will be maintained. Pure tone audiometry and other audiological testing like impedance audiometry, brain stem response audiometry will be conducted, if needed.

4. Results

After screening children for hearing loss it was found that 87 of these children had some hearing deficit amongst the population of school going children in south Kashmir, so total 87 patients were included in the present study. 37 boys (42.5%) had hearing loss in comparison to 50 girls (57%). Among all age groups (5-9), (10-14) and (15-18) years incidence was noted as 23(26%), 39(44.8%) and 25(28.7%) respectively. Out of 87 patients with Hearing Loss 73 patients (84%) had CHL, 14 patients (16%) had SNHL and. 47 patients (54%) had Bilateral Hearing Loss, 24 patients (27.5%) had Right sided unilateral Hearing Loss and 13 patients (15%) had Left sided unilateral Hearing Loss. Out of 87 patients compared to disease 28 patients (32.10) had CSOM,22 patients(25.20)had wax,15 patients(17.20)had OME,13 patients (14.90%)had ASOM, 7 patients (8%) had Otits Externa and 3 patients (3.40%)for Trauma and Functional respectively.

Amongst the affected children majority had conductive hearing loss 73(84%), and 14(16%) had sensorineural loss (**Table 1**). The girl population had a significantly higher incidence rate of 57% as compared to boy who had a incidence rate of 42.50% (**Table 2**). The hearing handicap was more common in patients with 10-14 years of age with a incidence rate of 44.8% and the other age group (5-9)having a incidence rate of 26% and 15- 18 having incidence rate of 28.70% **Table 3**. Out of 87 patients 47 patients (54%) had bilateral hearing loss and 24 (27.50%) had right sided unilateral hearing loss and 13(15%) had left sided unilateral hearing loss. (**Table 5**) Chronic suppurative otitis media was by far the commonest cause. It was responsible for hearing loss in 28(32.10%) children. 22 (25.20) children had wax, 15(17.20%) had Otitis media with effusion, 13 (14.9%) had acute otitis media,7(8%) had otitis externa and 3 (3.40%) had trauma and functional. (**Table 4**)

Out of 87 patients 35 patients (40%) underwent medical management, remaining 34(39%) patients had undergone surgical management in which 16 patients (47%) had done tympanoplasty, 3 patients (9%) had done cortical mastoidectomy, 9 patients (26.4%) had done modified radical mastoidectomy and 6 patient (18%) had done grommet insertion. 5 patients (5.7%) were lost to follow up and the remaining, out of which 18 patients (20.6%) had wax removal and out of which 13 patients (15%) had received hearing aids. (**Table 6**)

5. Discussion

In children and young adults, Otitis Media is the commonest cause of persistent mild to moderate hearing impairment9 High prevalence of CSOM in children may be attributed to the fact that they are more prone to upper respiratory tract infections. Long-term consequences of persistent severe ear infection can arise in untreated cases like speech development disorders, poor academic and educational development and lower overall quality of life.[10] In developing countries like India, the main predisposing factor for Otitis media is lower Socio-economic status. Overcrowding, poor hygiene and sanitation, inadequate health care and education and malnutrition lead to upper respiratory tract infection including otitis media. Infection can spread from middle ear to vital structures such as mastoid, facial nerve, labyrinth, lateral sinus, meninges and brain leading to mastoid abscess, facial nerve paralysis, deafness, lateral sinus thrombosis, meningitis and intracranial abscess.[11,12] The treatment itself of ear diseases in childhood is associated with significant morbidity and mortality due to surgery and also puts a significant financial burden on family and health care

services.[14] The early diagnosis and management can prove to be effective, in reducing socioeconomic burden and prevention of deafness.[13,14]

6. Conclusion

Early detection of disease and health educational training, awareness programs on of the disease for school going children and parents is needed to reduce the prevalence of the disease. Improvement of health care facilities and awareness among health-care providers for early treatment would definitely be helpful in reducing the further hearing loss and other complications.

7. Source of Funding

None.

8. Conflict of Interest

None.

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