A Study of the Incidence and Causation of Deafness Among the Children in the Tribal Population of Manipur and Its Prevention

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Abstract

In a clinico-audiological study of 6,674 children in 24 tribal villages in the hills of Manipur in a total population of 18,565, the incidence of deafness is found to be 6.62% The incidence of the conductive deafness is 98.64% and that of the sensori-neural is 1.35%. Episodes of cold attacks and running nose are found to be precursors of the prevalent conductive deafness. Preventive measures are worked out.

Communication has gradually and eventually taken a very important place in the ever ongoing human world. To hear somebody talk or speak and to be able to understand and to communicate to one another is becoming very essential in the development of one's knowledge, intelligence, wisdom and finally of a good personality. Also these are the qualities which are counted when one goes for a vocation or a job prospect to one's liking specially so in this modern age of competition.

Definitely deprivation of hearing adversely affects a man of such qualities. Deaf children find difficulties to develop academically and find themselves very poor in the keen competition of life in their future years. To keep children well equipped on this aspect and to prepare them to be the future pillars of the society should be the prime duties of every parent as well as of the health personnels. With this observation, the authors took up this study. Such a study has not been taken up earlier in this part of our country.

Materials and Methods

From July 1993 to October 1994, the study team covered 24 tribal villages, 20 in the hill districts of

spotted to have impairment of hearing of deafness. A thorough work-up, including the recording the social, educational, behavioural and intelligence status in addition to detailed history-taking, careful ear, nose and throat examination and tuning fork tests and an audiogram with a portable audiometer was done for each of the 442 children.

Medical treatment, advice for follow-up as well as instructions for prevention against further worsening of the involving disorders to the concerned parents or guardians were also rendered in the form of small-time-free-medical camps.

Results and Observation

The percentage of children's population in the villages was 35.77% and there was 6.62% prevalence of deafness among the children (Table-I). 98.64% of the deafness was of the conductive type with ratio between the unilateral and bilateral involvement as 1.9:1. The sensori-neural type of deafness was found only in 1.35% of the cases with the ratio between the unilateral and bilateral involvement as 1:5 (Table-II).

The age incidence was found to be highest in the children group of 6-10 years of age (Table-II). Males

Table – I

Total number of population in the village	Total number of children	Number of deaf children	Percentage of children's population	Percentage of deaf children
18.655	6.674	442	35.77%	6.62%

Children population and percentage of deaf children.

Manipur and 4 pocket villages in the valley, altogether over a population of 18,565. 9 villages belonged to the Rongmei Nagas, 5 to the Tangkhul Nagas, 4 to the Kukis and 1 each to the Vaipheis, the Paites and the Hmars combined, the Koms, the Thangals, the Anals and the Moyons respectively. Despite certain minor cultural differences, all of them were almost of the same habits and socio-economic status was no more recorded because it was easily observable that 99% of the children belonged to the poor socio-economic group.

A clinical-audiological survey of 6,674 children below 12 years of age was done, out of which 442 were

were found to be more than the females in all age groups with an overall ratio of 1.25:1. The sex ratio became narrower (1.01:1) in the age group of 10-12 years).

The disorders (causes of deafness) found to be associated with the conductive deafness were chronic suppurative otitis media (C.S.O.M), acute suppurative otitis media (A.S.O.M), healed perforations of the tympanic membrane and disorders of the nose, paranasal sinuses, adenoids and tonsils affecting the air-pressure system of the middle ear cleft as shown in the Table-IV with their distribution of causes.

C.S.O.M. was found to be the lesion in 51.83% of the

Table-II

Type of deafness	No. of cases	Percentage	Unilateral	Bilateral	Ratio between
1. Conductive	436	98.64%	286	149	1.9:1
2. Sensori-neural deafness	6 442	1.35%	1	5	1 : 5

Type of deafness, unilateral and bilateral involvements and number of cases.

Table-III

Age group in years	No. of deaf children	Percentage of deafness in age group	No. of males	No. of females	Male : Female Ratio
0 to 2	7	12.90%	35	22	1.59 : 1
2 plus to 4	57	12.90%	32	25	1.28 : 1
4 plus to 6	64	14.38%	37	27	1.31 : 1
3 plus to 8	92	20.80%	52	40	1.30 : 1
8 plus to 10	97	21.19%	52	45	1.15 : 1
10 plus to 12	75	16.96%	38	37	1.02 : 1
Total out of					
6,674	442	6.62%	246	196	1.25 : 1

Age and sex incidence with male : female ratio.

cases with the tubo-tympanic type 90.7% and attic-
antral type 9.29% (Table-IV). Out of the tubo-
tympanic types, again, those in the active state were
69.26% and those in the inactive were 30.75%. The
incidence of the acute otitis media (A.O.M.) and acute
suppurative otitis media (A.S.O.M.) altogether was 23.
39% and that the healed perforation was 4.12% only.
Disorders of the nose, paranasal sinuses, adenoids and
tonsils leading to conductive deafness were found to
be present in 20.64% of the cases. Out of these,
retracted tympanic membrane (R.T.M.) was found in
56.66% of the cases, adhesive otitis media in 8.88%
and loss of lustre of the tympanic membrane in
34.44% of the cases. In all of this group, the unilateral
involvements was higher than the bilateral.

There were a few certain interesting findings. There
was a case of congenital severe sensori-neural hearing
loss in a 3 year-old-girl without any obvious cause.
No significant past history nor any suggestive
disorders during the mother's pregnancy could be ruled
out. There was also another spastic girl, 2 years old,
with C.S.O.M. Another case of C.S.O.M. with
otogenic meningitis in a 5 year-old-girl was also found
by the team and was followed up with adequate

treatment and management to a full recovery of the
child. In none of the cases, mixed type of deafness was
found.

The team also made a study of the behavioural aspects
of the children above 4 years i.e. in 328 children. 57
(17.77%) was unco-operative, fearful and was crying
during the examination, 158 (48.17%) were found to
be shy, timid and reserved. 48 (14.63%) were sullen
and indifferent and 65 (19.81%) were cheerful,
intelligent, responded and co-operated well during the
history-taking and examination.

Discussion

It was difficult to assess the degree of the hearing loss
among the infants and children below 4 years with the
portable audiometer and free-field techniques.
However, all of them presented with one of these
disorders viz., C.S.O.M., A.O.M. and disorders of the
nose, paranasal sinuses, adenoids and tonsils.
Therefore they were put under the category of
conductive deafness.

There were 3 particular cases of C.S.O.M. with
conductive deafness in 3 children whose parents could
ascertain that measles was the cause of the lesion.

The incidence of deafness 6.62% in this study among the children in the tribal population of Manipur is high compared to that of other paediatric diseases but is not as high as expected. Mishra et al (1988) in Patiala area reported 12.25% incidence of hearing loss among the school going children. Out of this the incidence in the urban school was 8.75% and that in the rural school is 15.8%.

In the present study the incidence of hearing loss was still lower than that in the urban school children of Patiala area. The less incidence (6.62%) in the present study reflects that the habit and hygiene of the tribal population in the hill districts of Manipur might not be as bad as those of them in the rural areas of the rest of India, although the socio-economical status might be at a poorer level.

The findings of the present study correspond to those of Proctor (1963) in American population with 7 to 13% incidence of hearing loss. However, it is definitely higher than that found by other Western investigators like Godberg (1963) 1 per 2000 and Gregory (1964) 8 per 1000.

The finding of the 98.46% incidence of conductive deafness reveals that 98%, more or less, of the prevalent deafness among the children in the tribal population of Manipur can be cured if care and management are taken up in time and adequately. The study also reveals that C.S.O.M., A.S.O.M., A.O.M. too are aetiologically the consequential disorders of the nose, paranasal sinuses, adenoids and tonsils. Moreover during history-taking the parents or guardians of almost all the cases gave history of cold episodes, running nose, and symptoms of upper respiratory tract infection. If the parents take a little bit of care and precautions, these disorders can be cured and thus deafness prevented as well. Earlier authors who dealt with such a topic hardly mentioned and preventive measures against such a deafness. To prevent the prevalent conductive deafness and to help the pre-existing deafness get relieved, that study team worked out the following preventive measures :

- i) To consult a doctor within 24-48 hours, if a child is found to have cold which can be manifested by :

Table-IV

Disorders	No. of	No. of	Total No. of	Percentage
1. Chronic suppurative otitis media (C.S.O.M.)	149	77	226	51.83%
i) Tubo-tympanic type	i) 133	i) 72	i) 205	i) 90.70%
a) Active			a) 142	a) 69.26%
b) Inactive			b) 63	b) 30.73%
ii) ttico-antral	ii) 16	ii) 5	ii) 21	ii) 9.29%
2. Acute otitis media and Acute suppurative otitis media	35	37	102	23.39%
3. Healed perforation		-	18	4.12%
4. Nose, Sinus, Adenoids and tonsil Disorders with conductive			90	20.64%
i) Retracted tympanic	-	-	i) 51	i) 56.66%
ii) Adhesive otitis	-	-	ii) 8	ii) 9.29%
iii) Loss of lusture of T.M.	-	-	iii) 31	iii) 34.44%

Incidence and percentage of the disorders found associated with conductive deafness
(causes of conductive deafness) in the study.

- (a) nasal obstruction.
- (b) nasal discharge or running nose.
- (c) sneezing bouts.
- (d) bleeding from nose.
- (e) pain in the throat.
- (f) cough, fever and headache.
- ii) Once there is discharge in the ear, to avoid entry of water and/or moisture in the ear. To avoid swimming and driving absolutely until and unless the doctor says alright.
- iii) If there is history discharge in the ear, to follow up consultations with the doctor, until and unless the doctors says it is done with.

children in the tribal population of Manipur is quite high compared to that of other paediatric diseases.

- ii) 98.64% of the prevalent deafness is of conductive type which is curable if the patients comply with the procedures of investigations and management in time and adequately.
- iii) Episodes of cold attacks, discharge in the nose or running nose are the precursors of the prevalent deafness.
- iv) Prevalence of the prevalent deafness can be worked out especially with a hallmark focus on the care of cold and running nose.

Conclusion

- i) The incidence of deafness 6.6% among the

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Congratulation

Prof. S. B. ogle was invited by World Health Organisation as an advisor for South East Asian Countries to frame the guidelines on Community noise held at London from 26th - 30th April '99.