

CLEFT PALATE AND OTITIS MEDIA

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Abstract: Middle ear involvement is almost always there in children with cleft palate. A study of 42 cleft palate cases and 42 control cases was carried out. The incidence of otitis media with effusion (OME) and B Type tympanogram was commonly found in children below the age of 5 years and 5th year onwards incidence of atelectasis and C type tympanogram increased. The diagnosis was more accurate in ear patients with a battery of test including electro acoustic measures and pneumatic otoscopy than pure tone audiometry alone.

Key words: Otitis Media, Cleft Palate, Impedance, Pneumatic Otoscopy, Tympanometry.

Middle ear involvement is almost always there in cleft palate children¹. 100 percent involvement has also been observed at myringotomy^{2,3}. Normal children without cleft palate has a low prevalence of OME 10 to 22 percent^{2,4}. The incidence of middle ear infection gets decline with growing age and by the age of 15 years, about a third have a hearing loss less than 20 dB on pure tone audiometry at speech frequencies .

In cleft palate children tubal dysfunction is the most probable cause of Otitis Media with Effusion (OME), which develops because of impaired aeration of the middle ear due to palatal incompetence, caused by abnormal insertion of muscles of soft palate which are hypoplastic too^{1,5,6}.

The pure tone audiometry is not reliable in small children and it is not unusual to have normal audiograms in cleft palate children and its efficacy has been questioned by numerous workers⁷. Association of pneumatic otoscopy and impedance are invaluable tools to clinch the diagnosis.

The incidence of perforation of tympanic membrane 4.7% to 27% and cholesteatoma 6 to 20% varies
From: Indian Institute of Ear Diseases, Railway Road, Muzaffarnagar

in literature and the frequency of ear involvement declines with age but effusion prevails in adults though the incidence of tympanosclerosis is much higher¹¹. The Tympanosclerosis is more common in cases of myringotomy with tube insertion. The hearing usually improves after surgical closure of palate.

Bluestone et al (1975) studied Eustachian tube function in patients with unrepaired and repaired cleft

Age	No.	Male	Female
0-1 yr.	5	2	3
2 yr.	6	3	3
3-5 yr.	5	3	2
6 yr.	19	12	7
7-10 yr.	7	5	2
Total	42	25	17

palate. He reported improved Eustachian tube function in the repaired group, stating that the difference in tubal function could not be attributed to difference in age alone.

MATERIAL AND METHODS

Retrospective study of children attending out patient department of Indian Institute of Ear Diseases,

Age	Normal otoscopy	Slight scarring of ear drum	Doubtful scarring of ear drum	Tympanosclerosis of ear drum	Effusion otitis media (OME)	Acute otitis media	Atelectasis(A) of ear drum Perforation(P)/Cholesteatoma(C)	Total no. of ears
1 yr.	1	-	-	-	8	1	-	10
1-2 yr.	1	-	1	-	10	-	-	12
3-5 yr.	1	1	-	1	7	-	-	10
6 yr.	14	2	-	4	8	-	7A/2P/1C	38
7-10 yr.	4	2	-	3	3	-	1A/1P	14
Total	21	5	1	8	36	1	8A/1C/3P=12	84

Muzaffarnagar were the subject of study. The children attended hospital for one or other problem pertaining

divided in three groups:

Otoscopy: 42 children and a total of 84 ears were examined. Details are shown in Table II otitis media with effusion (OME) was observed in majority in the lower age group, as the age advanced, the incidence of secretory otitis media declined and atelectasis and tympanosclerosis became more common. The incidence of perforation was more common than cholesteatoma. Again with the advancement of age, appearance of tympanic membrane was more towards normal. Similar results were also observed in control group though the incidence of pathology was

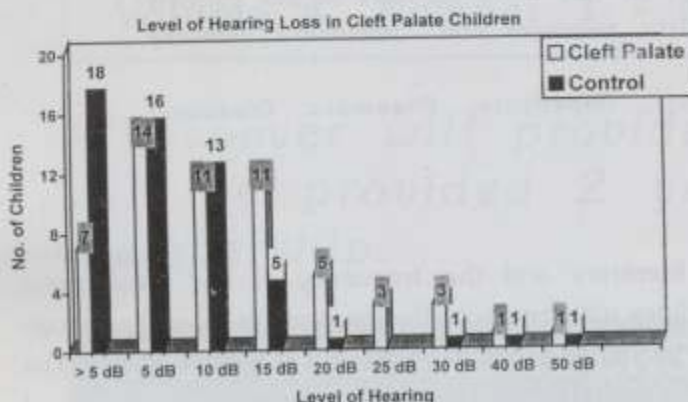


Figure-1

to otolaryngology. A total of 42 children as patients and 42 control cases randomly picked up children from a school were the case material all within the age of 2 to 10 years.

All patients and control were subjected to routine ENT examination, pure tone audiometry, tympanometry including stapedial reflex and pneumatic otoscopy, audiometry was performed using air and bone conduction. Electroacoustic impedance measures consisted of middle ear pressure, static compliance and the acoustic stapedial reflex, as well as contra lateral reflex in both ears.

All children were examined by author under the microscope and after suction clearance if required, With Siegles speculum mobility of tympanic membrane was checked and recorded. The Siegle's speculum was not used in discharging ears.

RESULTS

For the convenience of examination, results were

Tympanogram Types at Varying Ages in 42 Cleft Palate Patients (84 Ears)

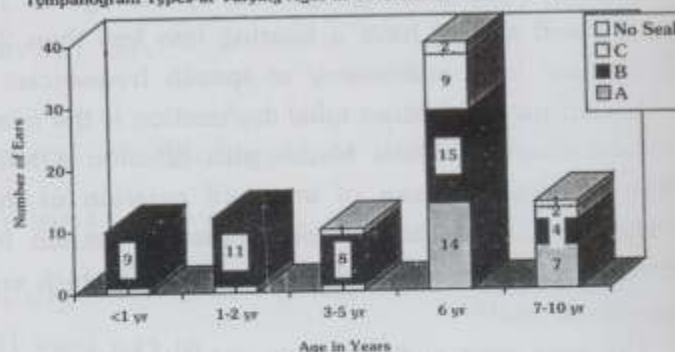


Figure-II

Age	Normal	Abnormal	Total
0-1 yr.	1	9	10
0-2 yr.	1	11	12
3-5 yr.	1	9	10
6 yr.	14	24	38
7-10 yr.	4	10	14

Table-IV
Level of Hearing Loss in Cleft Palate Children
Comparative Study

Level of Hearing Loss	Control	Cleft Palate
<5 dB	18	7
5 dB	16	14
10 dB	13	11
15 dB	5	11
20 dB	1	5
25 dB		3
30 dB	1	3
40 dB	1	1
50 dB	1	1

quite low in Control group. The evidence of secretory otitis media and atelectasis was observed in cleft palate children.

Audiometry: The audiometry was performed in all the children, above four years of age, in both the groups

Table-V
Type of Tympanogram Obtained in a Sample of Control (n=84) and Cleft Palates (n=84)
Comparative Study

Tympanogram Type	Cleft Palate	Control
A	21	56
As	2	11
Ad	1	-
B	47	13
C	12	2
No Seal	1	2
Total	84	84

Type of Tympanogram Obtained in Sample of Control (n=84) and Cleft Palates (n=84)

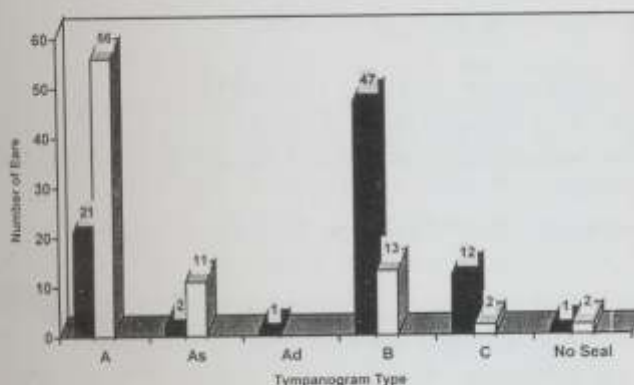


Figure-III

bone conduction was better except one case, which had a sensorineural deafness. Table IV and figure I illustrate hearing loss and number of children affected. The hearing, improved significantly after the age of five years. There was no significant difference of hearing function in unoperated and operated children, below the age of five years.

Impedance audiometry: The table V shows the incidence and type of tympanogram and figure II illustrate Type A of the incidence age wise. B type i.e., flat tympanogram was more predominant. From third

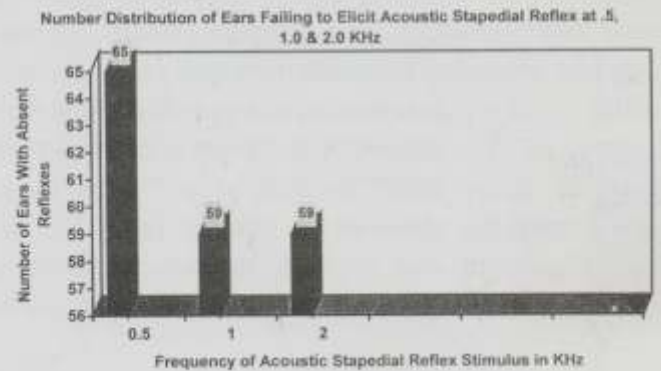


Figure-IV

year of age C type of tympanogram increased and at the age of 6 years and onwards the incidence of normal tympanogram i.e., A type increased considerably. The compliance value ranged from 0.09 to 2.51 cu. cm with a mean of .56 cu. cm. Acoustic reflex threshold was detected at 500, 1000 & 2000 Hz at 90 dB. Acoustic stapedial reflex could not be elicited in 82% cases (Figure 4). No differences on audiometry was found in ears, having normal or negative middle ear pressure as compared to hearing level. The maximum deafness was observed in flat tympanogram ears.

DISCUSSION

The hearing loss though usually mild with other ear complications is a usual feature in cleft palate cases. This retrospective study was conducted to evaluate the type of pathology and deafness in cleft palate children in north Indian conditions.

The incidence of cleft palate was observed more in male child, (table I) this might be due to a social reason of better male care since all the children attended Hospital for one or other ENT problem. The

incidence of secretory otitis media was more frequent and atelectasis and tympanosclerosis dominated in older children after the age of five years.

In children with cleft palate the otoscopy revealed abnormal tympanic membrane in 75% cases through the incidence of normal appearing tympanic membrane was higher after the age of 5 years but incidence of otitis media with effusion and atelectasis was significantly higher than control (table III). Even when appearance of tympanic membrane was normal the impedance was abnormal in four cases but in majority of cases results of impedance concided with pneumatic otoscopy under microscope but results of audiometry were not consistant. The children having no hearing loss had abnormal tympanogram and otoscopic abnormality while patients having ear pathology had normal audiogram. The similiar results were observed previously by Beery et al¹¹ & Bess et al¹². The stapedial reflex could be observed in 18% of cases out of 84 ears (Figure IV). In a study, Renvall found acoustic reflex quite sensitive and concluded that the presence

of reflex is a good sign of normal middle ear function^{13,14}.

The grommet was observed only in two cases in our series, hence no conclusion could be drawn but the increased incidence of tympanosclerosis and otorrhoea was observed with ventilation tube and myringotomy⁷.

CONCLUSION

The middle ear pathology was almost always observed in cleft palate cases. Otitis media with effusion was predominant in lower age group but with advancement of age atelectasis and tympanosclerosis dominated. B type of tympanogram was present in majority of cases. Results of pure tone audiometry were not always reliable. The diagnosis with higher degree of accuracy could be achieved with pneumatic otoscopy, electroacoustic measures along with pure tone audiometry, not even in cleft palate cases but also in other subjects having ear diseases. The author recommends a periodic checkup of ears and precautionary measures should be taken to prevent atelectic ears.

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