

SECRETARY OTITIS MEDIA: ITS SEASONAL VARIATION

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Abstract: Tympanometric and otoscopic examination was attempted in 245 school children, in the first sitting tympanometry could be performed successfully in 213 children and in second sitting 194 children could be examined. A significant decline in B type response was noted with change in weather. The maximum decline was in 10-12 year age group.

Key words: Tympanometry, Seasonal variation, School children, Otitis media.

The importance of tympanometry is well established as a diagnostic tool to assess the tympanic membrane, ossicular chain and tympanic cavity. The mechanical acoustic bridge was described in 1934 by Shuster¹ but Metz Zwislocki and Feldman's work brought it to current use.²⁻⁴ Several studies have shown its importance over audiometry in children, which is not reliable below 5 years of age⁵. Otitis media with middle ear effusion (MEE) is a prominent complication of upper respiratory tract infection, usually viral in origin. Viral infection promotes production of inflammatory mediators, reduced ciliary clearance, altered bacterial adherence leading to Eustachian tube dysfunction which causes negative middle ear pressure producing otitis media with middle ear effusion (OME)⁶.

The middle ear is one of the most commonly affected organ in winter months leading to OME^{7,8}. The importance of exposure to cold is well established. No study could be traced in our scenario on effect of seasonal variation upon OME, hence this study was undertaken to assess the hearing impairment which can lead to retardation in studies, along with hampered physical & mental development of a child.

CAUSE OF EXCLUSION SECOND STUDY

Cause	No.	%
Pain in ear	2	0.93
Reluctance/non Cooperation to study	17	7.98
Total	19	8.92

Table No. I

MATERIALS & METHODS

This two step study was conducted at suburban area of Uttar Pradesh. In this phase of study 194 children could be examined successfully while in first phase 213

CHANGE IN CONTRIBUTING FACTORS

	First study		Second study	
	Nos.	%	Nos.	%
Parental smoking				
Father	35	14.28	34	17.52
Mother	8	3.26	2	1.03
Dairy Products	15	6.12	9	4.639
Digital Sucking	3	1.22	1	.51
Nail biting	7	2.85	2	1.03
Children examined	245		194	

Table No. II

children were examined. Age and sex distribution shown in table III. ENT examination, including

Types Of Tympanogram

Type	Specification	
	Pressure	Compliance
A.	> 0.2m	+50--> -99mm H ₂ O
B.	Flat curve	
C ₁	> 0.2mgm	-100m -200.m H ₂ O
C ₂	02 mgm	-200m -300mm H ₂ O

Table III

otoscopy, tuning fork test and tympanometry was carried out in all cases apart from elementary general physical examination. Puretone audiometry was done as and when required. SD 30 Siemens impedancemeter was used (with specification). Patients were interrogated by Proforma for any change in habits of child, parental smoking or anything significant which could amount for child's illness^{7,8}.

RESULTS

In the second sitting no case of B type response could be observed in age group of 10-12 years. The children having abnormal tympanogram were examined specifically for abnormal tonsils & adenoids, deviated nasal septum, bronchial asthma, allergic rhinitis, recent history of pyrexia or exposure to cold including visit to hill station or air travel. The incidence of enlarged tonsils and adenoids as 4.12% out of which 1.54% had congested tonsils and 3.60% children had deviated septum out of which 1.54% had acute sinusitis apart from 9 children having allergic rhinitis.

DISCUSSION

The tympanometry being a reliable non invasive procedure, besides being a less time consuming, was used in this study to assess the hearing level with probable aetiopathology in school children of various age groups. During the first observation it was noticed that the incidence of secretory otitis media was quite high in children of 5-8 years i.e 16.1% which came down to 12.5% with change of weather which is consistent with studies from Riyadh⁹ and Eastern Island¹⁰.

Type A tympanogram which was treated as normal, was observed in 76.5%. The A type response was seen maximally (95.9%) in 10 to 12 years group, which was seen to increase in second sitting once the chilly season was over by 17.4%, from 78.46%

The incidence of B type response was absent in senior children that is in the age group of 10 to 12 years while 5 to 6 years (Junior) group there was not much decline in B type response.

Type B tympanogram an indication of otitis media with effusion was observed in 5.41%. The B type response was maximally seen in the 5 to 6 year's age group which may be due to shorter and less angled Eustachian tube while Sly et al¹, stephanie A, et al³ reported very high incidence which is consistent with our first phase (during winters) in children of 5-8 years group which came down drastically and consistent with a report from Greece by Apostolopoulos⁵.

C type response suggests again otitis media but in

ASSOCIATED ILLNESS

Illness	Total	5-6 Age Group	6-8 Age Group	8-10 Age Group	10-12 Age Group
Enlarged tonsil & adenoid (T&A)	5	1	1	1	2
Congested T&A	3	1	1	1	-
Deviated nasal septum(DNS)	4	1	1	-	2
DNS with Sinusitis	3	1	1	1	
Allergic Rhinitis	9	5	2	1	1
Bronchial Asthma	1	1	-	-	-
Pyrexia (Unknown origin)	7	2	1	2	2
Exposure to cold	2	-	1	1	-
Visit to hill station	1	1	-	-	-
Air Travel	2	-	-	-	2

Table No. IV

C1 phase an early recovery is expected, was observed

AGE & SEX DISTRIBUTION

Age Group	Total		Examined Children	Male	Female
5-6 years	41	A	34	19	15
		B	28	15	13
6-8 years	62	A	51	28	23
		B	47	25	22
8-10 years	69	A	63	42	21
		B	58	38	20
10-12 years	73	A	65	33	32
		B	61	29	32
Total	245		A-213	A-122	A-91
			B-194	B-107	B-87

Ist Phase (A) 213 Total 245 IInd Phase (B) 194

Table No. IV

observed in 10-12 age group by a decline of 14.4%
C2 type response was drastically reduced in second

sitting and was not observed in 10 to 12 years age
Otosopic finding were abnormal in the 8.92%, in first
sitting which came down to 4.38%. The similar observation
by Tos etal¹⁶, Al Fadala¹⁷ etal with change of weather. In
our study the incidence was more in male children which
is consistant with study of¹⁵ oos 1 etal. In our study
precipitating factors were also observed and parental
smoking, digital sucking, nail biting dairy products were
the factors worth considering, though much literature
is not available as contributing factors including feeding
patterns¹⁴.

The incidence of secretary otitis media is associated with change

CONCLUSION

in weather more in win ter and lower age group and male
children are affected mainly. Hearing asesment and
tympanometry should be a essential part of School health pro

TYPE & PERCENTAGE OF TYMPANOGRAMS

Age group	Exam	A %	B %	C ₁ %	C ₂ %	
All ears No. 426	A	426	272 63.8	42 9.86	76 17.8	36 8.45
All Ears.	B	388	297 76.54	21 5.41	52 13.40	18 4.63
5-6 Years	A	68	35 51.47	11 16.18	12 19.12	9 13.24
	B	56	27 48.21	7 12.5	13 21.42	10 17.85
6-8 Years	A	102	57 55.88	15 14.71	19 18.63	10 10.78
	B	94	64 68.08	8 8.51	17 18.08	5 5.31
8-10 Years	A	126	78 61.9	14 11.11	21 16.67	13 10.32
	B	116	89 76.72	6 5.17	19 16.37	2 1.72
10-12 Years	A	130	102 78.46	2 1.54	23 17.69	3 2.31
	B	122	117 95.90	-	3 2.45	1 0.81

Table No. V

in 13.4%. Maximally seen in age group 5-6 years
(21.4%) and incidence of C1 type response was decreased
in the second sitting by 3.4% and maximum benefit
was

gram and school timing should be such that exposure to cold
can be avoided and winter break should be a little longer for
children below 7 years.

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