BANGLADESH JOURNAL OF
OTORHINOLARYNGOLOGY
DOI: https://doi.org/10.3329/bjo.v32i1.90811
www.banglajol.info

Article info
Received : 05-10-2025
Accepted : 29-12.2025
No. of Tables : 12
No. of Figure : 0
No. of References : 17

Original Article

Relation of Hearing Loss with Enlarged Adenoid: A study of 60 cases in BMU, Dhaka

Ali MI[1], Begum R[2], Rahman SH[3], Alam MM[4], Tarafder F[5]

Abstract:

This study was done in 60 cases of Enlarge adenoids to see the correlation with hearing impairment. In this study 60 cases were selected from the admit and OPD in the Department of Otolaryngology Head & Neck Surgery, Bangladesh Medical University, Dhaka from October 2021 to March 2023

Here patients belonged to different age groups ranging from 3 years to 12 years. Out of 60 cases of enlarged adenoids normal hearing was found In 25 children (41.66%)and hearing impairment was found in 35 children (58.33%) 6-10 years of age group was highest age group with hearing impairment and male, female ratio was 1.7:1 there was 77.14% (27) bilateral and 22.85% (8) unilateral cases. Among 35 OME cases with Enlarged adenoids, 22 cases were gross adenoids 12 were moderate and I was mild adenoids Incidence of hearing loss among gross adenoids were 73.33% moderate adenoids were 48% and mild adenoids were 20%. Maximum hearing loss (41-50 db) was found in case of gross enlarged adenoids, Negative middle ear pressure (-201 to -300 mm of H^2O) was also maximum in case of gross adenoids.

Key words: *Enlarge Adenoid, Hearing loss. OME.*

Cite the Article: Ali MI, Begum R, Rahman SH, Alam MM, Tarafder F. Relation of Hearing Loss with Enlarged Adenoid: A study of 60 cases in BMU.. Bangladesh J Otorhinolaryngol 2026; 32(1): 13-19.

Introduction:

When considering diseases of the adenoids it is as well to remember that the mass of lymphoid tissue in the nasopharynx generally referred to as the adenoids is a normal structure with a definite function, namely the production of antibodies (lgA locally and lgG & lgM systemically). Many consider it pedantic to insist on the singular expression the adenoid, so the more common term adenoids will be used[1].

The size of the adenoids varies from child to child and also in the same individual as he/

1. *Dr. Mohammad Idrish Ali Associate Professor, Department of Otolaryngology-Head & Neck Surgery, BMU, Dhaka.
2. Dr. Rokeya Begumn Associate Professor, Government Homeopathic Medical College Dhaka.
3. Prof. Dr. Sheikh Hasanur Rahman, Professor, Department of Otolaryngology-Head & Neck Surgery BMU.
4. Dr. Md. Morshed Alam, Department of Otolaryngology-Head & Neck Surgery, BMU.
5. Dr. Farhan Tarafder, Consultant (ENT), Taqwa Hospital, Moghbazar, Dhaka

Address of Correspondence: Dr. Mohammad Idrish Ali Associate Professor, Department of Otolaryngology-Head & Neck Surgery, BMU, Dhaka

she grows. In general the normal adenoids attain their maximum size between the ages of 3 and 7 years and then regress[2]. What may be important in considering the harmful effect of the adenoids is not absolute size but more the size in relation to that of the nasopharynx[3]. The disease processes which affect the adenoids and cause problems are infective. An acute upper respiratory tract infection affects the adenoids and results in hyperplasia with enlargement and multiplication of lymphoid follicles[1].

Radiographic evaluation of nasopharynx is established as a simple method for determination of the size and position of the adenoids[5]. In 1970 Capitanio MA et al said that all children even 6 months: have adenoids tissue which is visible in radiograh[6].

- Normal adenoid size: When soft tissue shadow occupying less than $\frac{1}{3}$ rd of the nasopharyngel space. Where it is normal adenoid size.
- Mild enlargement: soft tissue shadow occupying rd in mild enlarged when nasopharyngeal space.
- Moderate enlargement: Soft tissue shadow occupying more than rd but less then rd nasopharyngeal space.
- Gross enlargement: Soft tissue shadow occupying rd more of the nasopharyngeal space.

There is close relationship between adenoids and possible middle ear pathology due to alteration of middle ear functions. The function of middle ear is it to transmit sound wave from external ear to inner ear by its transformer mechanism. The normal middle ear pressure is -100mm of H_2O to +50mm of H_2O and the normal middle ear compliance is 0.39 ml to 1.30 ml[7]. Adenoids cause tubal obstruction at its pharyngeal opening. It causes reduction in middle ear pressure towards negative side due to absorption of gas leading to otitis media with effusion[8]. In otitis media with effusion[8]. In otitis media with effusion middle ear pressure usually reduces below -100mm of H^2O[9] it is associated with reduction of compliance of middle ear below 0.10ml and conductive deafness of variable degree[10].

Objectives:

To find out the relation of conductive hearing loss in school going children with enlarged adenoids.

Methods:

This prospective study was conducted in outpatient and inpatient in the Department of Otolaryngology and Head Neck Surgery, Bangladesh Medical University, Dhaka, from October 2021 to March 2023.School going children. (Age-3-16- year), Children between the ages of 4 and 16 years and must have enlarged adenoids include in this study. Patient with conductive hearing loss with other than enlarged adenoids excluded from this study.

Results:

Table- I

Presenting symptoms of Adenoids (n-60)

Symptoms	Number of patients	Percentage %
Hearing Impairment	35	58.33
Mouth breathing	30	50.00
Nasal obstruction and discharge	30	50.00
Snoring	28	46.67
Dribbling of Saliva	21	35.00
Sleep disturbance	10	16.67
Voice change	10	16.66
Headache	5	8.33
Earache	5	8.33
Epistaxis	6	10.00

Table-II
Correlation of Age and Sex in hearing loss with enlarged adenoid

Age group	Total	Male	Female
5-0	9	6	3
6-10	18	11	7
11-16	8	5	3
Total	35	22	13

Table-III
Hearing status of children with Enlarged adenoid

Status of Hearing	Number of children's	Percentage %
Normal	25	41.66%
Hearing loss	35	58.33%

Table-IV
Hearing status of children with Enlarged adenoid (by Audiometry) Hearing status of patients (by Audiometry)

Status of hearing	Number of patients	Total No. of ears	Distribution% of ears	Air bone gap in dB	Distribution of % of ears	Percentage of ears %
Normal hearing	25	50	50	0-10dB	41.66	41.66
Hearing loss	35	70	50	26-40dB	71.14	58.33
			20	41-55dB	28.86	

Table-V
Presenting symptoms of OME among the patients of Adenoids

Symptoms	Number of patients	Percentage
Hearing Impairment	35	100
Mouth breathing	25	71.42
Nasal obstruction	25	71.42
Snoring	18	51.42
Dribbling of Saliva	15	42.85
Earache	5	14.28
Voice change	10	28.57
Headache	5	14.28

Table-VI
Otoscopic findings of OME

Features of tympanic membrane		No of Ears	Percentage	Total Percentage
Retraction	Present	70	100	100
	Absent	Nil	Nil	
Cone of light	Distorted	35	56	100
Colour of tympanic membrane	Absent	25	35.71	100
	Pale yellow	16	22.86	
	Grey	25	35.71	
	Blue	29	41.43	
	Present	48	68.57	
Fluid level	Absent	22	31.43	100
	Present	20	28.57	
Bubble	Absent	50	71.42	100

Table-VII

Amount of hearing loss in OME cases by Audiometry (n-35)

Hearing loss in dB	Number of Patients (n-35)	Percentage %
11-20dB	5	14.28
21-30dB	18	51.42
31-40dB	9	25.71
41-50dB	3	8.57

Table- VIII

Middle ear pressure and compliance in the patients with Enlarged Adenoid of OME (n- 35)

Middle ear pressure and compliance	No of patients (n-35)	No of ears (n-70)	No. of ears with reduced pressure and compliance (%)	No. of ears with normal pressure and compliance (%)
Bilateral reduced	27	54	62(88.57%)	8(11.43%)
Unilateral	8	8		
Reduced		8		

Table-IX

Size of adenoids with conductive hearings loss (n=60)

Sizes of adenoids	No of children with adenoid n=60	No of incidence of conductive hearing loss, n=35	Percentage of incidence of hearing loss in relation to particular site of adenoids.
Mild	5	1	20%
Moderate	25	12	48%
Gross	30	22	73.33%

Table-X

Size of adenoids with OME

Size of adenoids	No. of Patients of adenoids(N-60)	No. of incidence of OME (n-35)	Percentage of incidence of OME in relation to particular size of adenoids
Mild	5	1	20.00
Moderate	25	12	48.00
Gross	30	22	73.33

Table-XI

Correlation of level of hearing loss with sizes of the Adenoids

Sizes of Adenoids	No. of patients of OME	No. of patients with hearing loss in dB				
		0-10dB	11-20dB	21-30dB	31-40dB	41-50dB
Mild	1	-	1	-	-	-
Moderate	12	-	3	4	5	-
Gross	22	-	-	10	8	4
Total	35	-	4	14	13	4

Table-XII

Middle ear pressure and size of adenoids

Sizes of Adenoids	No. of patients with amount of middle ear pressure in mm of H_2O		
	No. of patients of OME (n-33)	-101 to-200 of H_2O	-201 to -300mm of H_2O
Mild	1	1	-
Moderate	12	9	3
Gross	22	6	16
Total	35	16	19

Discussion:

Enlarged adenoids are a common cause of hearing problems in children, especially in preschool and early school age groups. Enlarged adenoids significantly correlate with conductive hearing loss children, with studies showing an incidence of middle ear issues in over 50% of cases. The hypertrophy obstructs Eustachian tubes, leading to negative middle ear pressure, effusion (OME), and resulting in mild-to-moderate hearing loss (26-55 db).

AII together 60 patients were diagnosed as having Enlarged Adenoids are included in the series. The patients were further screened for the presence of Hearing impairment and middle ear function change.

In this study out of 60 children with Enlarged Aneroid showed normal hearing in 25 children (41.66%) and hearing loss was found in 35 children (58.33%). The incidence of a significant (58.33%) number of children with Hearing impairment indicates avery important etiological relationship with adenoids. Of the various

Factors suggested in the etiology a large number of authors have blamed the adenoids as an etiological factor of Hearing Impairment there has been a number of studies questioning therelationship[28]. According to other author[29] adenoids are a common cause of Hearing impairment. A study [30] stated that the effect of

the adenoids is of paramount importance because of the accepted attitude of many surgeons that their removal is indicated in the treatment of OME (Hearing impairment)Out of 35 patients of OME in this series there were 22(62.85%) male and 13 (37.14%) females. The male female ratio is1.69% Highest age group was 6-10 years and bilateral affection was found in 27 (77 .14%) whereas unilateral affection was found

in 8 (22.85%) cases. The bilateral unilateral ration is 3.37%. These findings are consistent with the findings of other investigators. [10,17] Incidences of hearings impairment among gross adenoids were 73.33 moderate adenoids were 48% and lowest incidence was found among mild adenoids (20%). incidence of hearing impairment depends upon the sizes of Enlarged adenoids[l2].In 4 out of 22 patients of OME with gross adenoids hearing loss was in the range of 41-50 dB. In this series no patient of OME wasfound with mild or moderate adenoids with a loss of hearing in the range of 41-50 dB. Severity of hearing impairment depends up to the sizes of unlaced adenoids[11'12] In 16 out of 22 patients of OME with gross adenoids middle ear pressure was in the rang e of -2O1to -300 mm of $H^2$0. In 3 out of 12patients of OME with moderate adenoids, the middle ear pressure was also found in the range of -201 to -300 mm of H^2O. But nopatient of OME with mild adenoids was found in this range of middle ear pressure. Middle ear pressure reduction is more in patients with gross adenoi6.[11'12]

The main limitation of this study that patients did not follow up regularly after surgery. The improvement in the hearing could not be evaluated after medical or surgical treatment of adenoids. So, the benefits of adenoidectomy for the affected children as done in other studies could not be confirmed from this study[13].

Conclusion:

Early diagnosis and treatment of enlarged adenoids can be encouraged to decrease the actual incidence, morbidity and complications of otitis media with effusion and thus conductive hearing impairment in childhood.

References:

1. L L Browning Aetiopathology of inflammatory condition of External and Middle Ear, Scott-Browns Otolaryngology Volume-3, P3/12-14.
2. Sadler TW, ed. Langman's Medical embryology, Baltimore,Maryland, USA, Willams and Wilkins, 1995; PP 347-354.
3. Hibbert J, Whitehouse GH. The assessment of adenoidal size by radiological means. Clin otolaryngol 1978; 3. 43-47.
4. Maw AR, Jeans WD, Fernando DCJ. Inter observer variability in the clinical and radiological assessment ofadenoid size and the correlation with adenoid volume. Clinotolaryngol 1981; 6:31 7 - 322.
5. Fujioka M, Young LW, Girdany BR. Radiographic evaluation of adenoid size in children. Adenoid nasopharyngeal ratio.AJR 1979; 133: 401 -404.
6. Capitanio MA, Kirkpatrick J.A. Nasopharyngeal lymphoid tissue. Radiology 1970; 96: 389.
7. Connor A.F. Examination of the ear. In: Booth JB, ed. Scott Brown's Otolaryngology. Otology, Oxford, Butterworth- Heinemann, 1997, PP: 3/1/1-3/1/29.
8. Buchman CA. Functional-anatomical correlation of eustachian tube obstruction related to the adenoid in a patient with otitis media with effusion: a case report. Ear-Nose-Throat-J 1994 Nov. 73(11): 835-838.
9. Cantekin El, Berry QC, Bluestone D. Tympanometric Patterns found in Middle ear effusions. Ann otol Rhinollaryngol 1977;86 (Supppt.41) : 16-20.
10. Paradise JL, Smith CG, Bluestone CD. Tympanometric detection of middleear effusion in infants and youngchildren. Pediatrics 1975; 58 : 198-210.

11. Hibbert. J. (1982) the role of enlarged adenoids in theetiology of serous otitis media. clinical otolaryngology; 7 :253-256

12. MAW. A. R, JEANS, W.D. and CABLE, H.R (1983) Adenoidectomy; a perspective study to show clinical and radiological changes two years after operation. Journal of Laryngology and otology. 97. 511-518.

13. Diseases of the middle ear. In: Gray RF, Hawthorne N1, eds.synopsis of otolaryngology, Bombay, KM Varghese, 1992, PP: 98- 128.

14. Pracy R, Siegler J, Steel PM, eds. A short textbook of theEar, Nose and Throat, 1974, Philadelphia, Lippincott, P: 105.

15. Roydhouse N. Adenoidectomy for otitis media with effusionAnn Otol Rhinol Laryngol 1980; 89 (Supple 68): 312-314.

16. Suzuki M, Watanable T, Mogi G. Clinical, bacteriological and histological study of adenoids in children. Am J otolaryngol1999 Mar- APr; 20 (2): 85-90.

17. Pillsbury. H.C... Gorse J.H and Hall. J.W (1991) Otitis media with effusion in children. Binaural hearing before and after Corrective surgery. Archives of otolaryngology- Head and Neck Surgery, 117, 7 18-723.