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RELATIONSHIP BETWEEN CLINICAL SYMPTOM SEVERITY SCORE AND ADENOID-NASOPHARYNX RATIO IN PAEDIATRIC PATIENTS WITH ADENOID HYPERTROPHY

Medical Science

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ABSTRACT

Objective: The aim of the study was to assess the clinical symptoms severity score of adenoid hypertrophy in paediatric patients, to determine the relation between the clinical symptoms severity score and Adenoid-nasopharynx ratio and to determine the adenoid nasopharynx ratio in relation to the age of the patient. **Methodology** It is an Observational, prospective based study. The chart of 41 patients who presented to GMCH, ENT OPD with complaint of nasopharyngeal obstruction due to the adenoid. All the children were clinically and radiologically assessed between (JAN 2020 to JUNE 2021)**. Results** Among 41 patients, female preponderance was observed. Majority of the patients were in the age group of 11-15 years. Snoring were observed to be the commonest type of lesions in both male and female. Mouth breathing was equally common in either sex. In our study, Apnea was seen in one patient each of male and female. The diagnosis based on clinical and radiological assessment were highly accurate. **Conclusion:** The A/N ratio has a strong relationship with actual adenoid measurement. Lateral neck radiography is a low-cost, readily available procedure with few side effects that could be used to treat adenoid hypertrophy.

KEYWORDS

tympanometry, adenotonsillectomy, adenoids, diagnosis, treatment.

INTRODUCTION:

In children, adenoid hypertrophy (AH) and otitis media with effusion (OME) are common conditions. Patients with OME have high-grade biofilm formation on their adenoid surfaces, implying that adenoids may play a key role in the onset of the disease[1] . The adenoids, which are also known as the pharyngeal or nasopharyngeal tonsils, are a median mass of mucosa associated with the lymphoid tissue. They exist as a rectangular mass of lymphatic tissue in the nasopharynx and are located in the roof and posterior wall of the nasopharynx. Meyer first described them as a mucosaassociated lymphoid tissue in 1868. The adenoids are part of the Waldeyer ring, which is made up of the adenoids, the palatine tonsils, and the lingual tonsils. Adenoids have a pyramidal shape, with the apex pointing towards the nasal septum and the base positioned between the roof and the posterior wall of the nasopharynx.1,2 Over the course of the first 3 weeks of gestation, the embryo first exists as a flattened bilayer of cells in between the amniotic sac dorsally and the yolk sac ventrally. At the beginning of the third week the process of gastrulation occurs whereby the germ disk becomes trilaminar.3 when lymphocytes, immunological factors, and inflammatory components are triggered by antigens, they aggregate in the mucosa of the middle ear cavity, where they might interact with pathogenic factors and induce chronic inflammation. A portion of the primitive foregut in conjunction with the branchial apparatus is responsible for development of the pharynx. Towards the end of the first month the foregut comes to lie dorsal to the developing heart tube and septum transversum (developing diaphragm). The stomodeum, a shallow depression lined with ectoderm, is separated from the cephalic end of the foregut in a human embryo by the buccopharyngeal membrane. The buccopharyngeal membrane ruptures at around 26-27 days, and the stomodeum joins the foregut.4 the nasopharynx arises from the developing nose anterior to the eustachian tube and from the primitive pharynx posterior to it. The pharyngeal muscles are derived from the third and fourth pharyngeal arches.3 the exact pathogenesis, however, is unknown. AH may obstruct the opening of eustachian tubes, resulting in bacterial reservoirs and eustachian tube dysfunction via ascending infection. Inadequate treatment of acute or subacute suppurative OM, however, is a major contributor to the rise in the prevalence of chronic serous OM, which causes mild and asymptomatic infection and leaves a thick mucoid effusion in the ear (5). Hearing loss with fluctuations during acute respiratory infections, a feeling ofheaviness or fullness in the ear, and impairment of sound perception are all common symptoms of OME (6). Minor changes in the tympanic membrane exist, and autoscopy may reveal a slight fading in the tympanic membrane (7). The most useful otoscopic findings are limited tympanic membrane movement in tympanometry and pneumatic otoscopy (8). The audiometric test is a diagnostic tool that reveals conductive hearing loss. Long-term chronic serous OM can cause cholesteatoma, tympanic membrane perforation, middle ear fibrosis, and tympanosclerosis, all of which can cause permanent hearing loss (9). As a result, timely diagnosis and treatment are essential. One of the most common causes of OME is adenoid hypertrophy. Runny nose, hypernasality, OME, sleep disturbances, and mouth breathing are all symptoms of this clinical condition (10,11). These signs and symptoms point to a link between adenoid hypertrophy and upper respiratory tract obstruction. One of the most important indications for adenoidectomy, which is one of the most common otorhinolaryngological surgeries, is adenoid hypertrophy (12). The removal of a hypertrophic adenoid gland surgically eliminates respiratory symptoms and restores normal craniofacial development (12). Several clinical trial studies have demonstrated the efficacy of adenotonsillectomy in the treatment of OME (13, 14). In a nutshell, it was proposed that patients with recurrent or chronic OME might benefit from adenoidectomy because it removes an infectious source from a large adenoidal mass that is linked to one another (15). To try to overcome this drawback, to date, numerous criteria in radiographs of this area have been examined. Adenoid-nasopharyngeal ratio (A/N ratio) is one of the most important and most widely used criteria (16), albeit, the results of various studies were inconsistent. There was a positive significant correlation between results of adenoid gland measurements during surgery and A/N ratio in lateral neck radiography, and adenoid size could be estimated with high accuracy by using A/N ratio (17). However, this method sometimes overestimates adenoid size when it is too small and or it is too big (18). In another study in India it was proven that A/N ratio $\geq$0.7 mm is an adenoidectomy indicator (19). Although, some studies indicated nasopharyngeal assessment using lateral neck radiography, lack of accuracy and hence A/N ratio in assessment of adenoid hypertrophy (20). This study aimed to determine A/N ratio in children with OME and its relation with different factors.

METHODOLOGY:

A total of 41 patients who presented to GMCH, ENT OPD with complaint of nasopharyngeal obstruction due to the adenoid were clinically and radiologically assessed between (JAN 2020 to JUNE 2021).

Inclusion Criteria:

Patients in the age group 3-15 years.

Exclusion Criteria:

Patient with history or clinical evidence of bleeding disorder, history or clinical evidence of neuromuscular / craniofacial disorders, patients with cleft palate or previous history of cleft palate repair and lack of co-cooperativeness of the patient precluding participation in the present study.

RESULTS

- 41 cases of nasopharyngeal obstruction due to the adenoid were studied.Majority of cases were in the age group of 11-15 years 17 (41.46%) followed by 13 (31.71%) in age group 7-10 years and 11

(26.83%) in 3-6 years of age.

- Female predominance was seen in elder children of age group 11-15 years, whereas in younger patients of age group 3-6 and 7-10 males were more.
- When clinical scores were assessed on the basis of age group (years), maximum patients (10) with moderate clinical score were in the age group of 11-15 years followed by 7 in the age group 3-6 and 7-10 years. Maximum patients (3) with severe clinical score were also in the age group of 11-15 years, followed by 1 each in 3-6 years and 7-10 years. Maximum patients with mild clinical score were found in the age group of 7-10 years and 11-15 years. Least were in the age group of 3-6 years.
- Mean adenoid size in 3-6 years is 1.98 cm, which increased to 2.39 cm in 7-10 years of age and later there is a statistically significant decrease in 11-15 years to 2.23 cm.
- There is a statistically significant increase in nasopharyngeal depth as the age increases; in 3-6 years 2.62cm, 7-10years 2.91cm and 11-15years 3.44cm.
- According to above table the mean ANR of 3-6 years is 0.76, 7-10 years is 0.82 and 11-15 years is 0.65, which was statistically highly significant Snoring was most common symptom both in males and females. Mouth breathing was equally common in either sex. Apnea was seen in one patient each of male and female.
- There is a significant increase in children presenting with mouth breathing and snoring - 80%. There is significant increase in adenoid size in children presenting with mouth breathing and apnea – 2.40 cm

CONCLUSION

The clinical symptom score and the nasopharyngeal airway obstruction assessed by A/N ratio is more convenient radiological parameter for determining whether adenoid hypertrophy is clinically significant or not, rather than the size of adenoid. To conclude ANR > 0.73 ARE the candidates for adenoidectomy.

Table8: Treatment Given

1.

Table 4: Adenoid size between age group

Age group	N	Mean	Std. Deviation	Minimum	Maximum
3-6 years	11	1.98	0.13	1.70	2.20
7-10years	13	2.39	0.31	2.05	3.00
11-15years	17	2.23	0.37	1.80	3.00
Total	41	2.21	0.34	1.70	3.00

p=0.008 –Significant

2.

Table 9: Age versus severity of nasopharyngeal airway obstruction of childrenwith features of obstructive adenoids.

	Degree of nasopharyngeal airway obstruction based on AN-ratio	
Age group (years)	Mean AN ratio	±SD
3-6	0.76	0.08
7-10	0.82	0.10
11-15	0.65	0.11
Total	0.73	0.12