

## Original Research Article

# Current trends of adenotonsillar hypertrophy presentation in a developing country, Nigeria

Waheed A. Adegbiyi<sup>1</sup>, Shuaib Kayode Aremu<sup>2\*</sup>, Clement C. Nwawolo<sup>3</sup>, Chinyere N. Asoegwu<sup>3</sup>

Department of ENT, <sup>1</sup>Ekiti State University Teaching Hospital, Ado Ekiti, <sup>2</sup>Federal Teaching Hospital Ido-Ekiti/Afe-Babalola University Ado-Ekiti, Ido-Ekiti, Ekiti State, <sup>3</sup>Lagos University Teaching Hospital, Lagos, Nigeria

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### \*Correspondence:

Dr. Shuaib Kayode Aremu,

E-mail: [shuaib.aremu@gmail.com](mailto:shuaib.aremu@gmail.com)

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## ABSTRACT

**Background:** Adenotonsillar hypertrophy is a common paediatric disorder in Otorhinolaryngological practice worldwide. The prevalence, clinical manifestations and predisposing factors are well documented in developed countries. However, available data shows differences between the various studies. There is paucity of data from developing countries. Thus, this study is aimed at assessing the age group distribution, predisposing factors, clinical manifestation and complications of adenotonsillar hypertrophy in a developing country.

**Methods:** It is a prospective study of children under 10 years over a period of 24 months. Interviewer assisted questionnaire was administered. Data obtained were statistically analysed using SPSS version 18.

**Results:** Two hundred and fifty three, 253 subjects were enrolled into the study. Adenotonsillar hypertrophy affected all age groups studied. A high incidence was noted among the under 2 year olds. The Male: Female ratio was 2:1. Chronic cases constituted 55.7% of our study population. Common predisposing factors were atopy (73.9%), familial history (67.3%) and recurrent upper respiratory tract infection (58.2%). The Commonest clinical features were snoring, noisy breathing, tonsillar enlargement and narrowing of postnasal space air column. Failure to thrive, otitis media and rhinosinusitis were the commonly associated complications observed. No death was recorded.

**Conclusions:** Adenotonsillar hypertrophy is common in our environment. It is important for all primary health care physicians, paediatricians and otorhinolaryngologists to have a clear knowledge on this ailment. Prevention or reduction in incidence is possible.

**Keywords:** Adenotonsillar hypertrophy, Adenoid, Tonsils

## INTRODUCTION

Adenotonsillar disease is a common paediatric otorhinolaryngological disorder worldwide.<sup>1</sup> The disorder affects the upper respiratory tract.<sup>2</sup>

The tonsils are lymphoepithelial tissues located at the entrance of the upper aerodigestive tract.<sup>4</sup> They consist of the nasopharyngeal (adenoid), palatine, lingual, posterior and lateral pharyngeal wall parts. Together, they form the Waldeyer's ring.<sup>3</sup> Embryologically, they develop from

the epithelium of the primitive oronasal cavity, mesenchymal stroma and lymphoid cells. The tonsils increase rapidly in size between the first and third year of life with peaks in the third and seventh year.<sup>5</sup> They involute slowly before early puberty and finally disappear before the age of 20 years. The main cellular component of tonsils is B-lymphocyte while T-cell lymphocytes constitute about 40% of its total volume. It produces antibodies, lymphokines and gamma interferon. These induce cellular immunity.<sup>6</sup>

Common disorders of tonsils in the paediatric age group are obstructive hypertrophy and infection of the tonsils from viral or bacterial agents.<sup>7</sup> Obstructive hypertrophy results from increase in immunologic activity while infection of the tonsils leads to inflammation of tonsillar tissue.<sup>8,9</sup> Hypertrophic tonsils may be acute or chronic and account for about 80% of obstructive sleep apnoea in children.<sup>10</sup>

Severe forms of obstructive sleep apnoea due to adenotonsillar hypertrophy may be complicated by pneumonia, cor pulmonale, pulmonary hypertension, chronic hypercapnia or hypoxia and right heart failure.<sup>11-13</sup> However, adenotonsillar hypertrophy has been reported to more commonly cause acute and chronic otitis media, rhinosinusitis, maldevelopment of upper jaw and poor physical and mental development due to chronic hypoxia.<sup>14</sup>

For proper assessment, good history of presenting symptoms such as mouth, breathing, noisy breathing, snoring, frequent awake from sleep, enuresis, nightmares, hypersomnolence, feeding habit and academic performance must be taken.<sup>15,16</sup>

Findings on examination include adenoid faces, flattened nasolabial fold, pinched nose, protruding upper incisor, small for age, enlarged tonsil etc. Lateral x-ray soft tissue of head and neck region, chest x-ray and electrocardiogram are done to confirm diagnosis and rule out complications.<sup>17</sup>

There is paucity of literature on this common ailment in developing countries. Thus this study is aimed at determining the age group distribution, clinical presentation, predisposing factors and complications in our environment.

## METHODS

This is a prospective hospital based study carried out in Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria between November 2014 and December 2016.

All consecutive patients with symptoms suggestive of adenotonsillar hypertrophy were clinically evaluated by a detailed history. General examination and specific examination of ear, nose, throat, central nervous system, respiratory system and cardiovascular system were also done. Relevant investigations include radiological chest x-ray, x-ray postnasal space, electrocardiogram and echocardiogram were performed.

Informed consent was obtained from the parents or guardians before subject enrolment.

Inclusion criteria include, patients with either obstructive adenoid enlargement, tonsillar hypertrophy or both whose parents /guardians gave consent to participate in the study.

Exclusion criteria were those above 10 years of age, patients with craniofacial anomalies and patients with acute upper respiratory tract infection.

An Interviewer's assisted study form was used to collect data. The data collected include the following.

1. Demographic information
2. Presenting complaints.
3. Associated symptoms.
4. Frequency of tonsil infections
5. Otologic symptoms
6. Nasal symptoms
7. Respiratory symptoms
8. History of similar symptoms among the siblings.
9. History of allergy.
10. First source of health attention.
11. Physical findings on general examination and examination of the ears, nose and throat.
12. Radiologic findings
13. Electro and Echocardiographic findings.

Data obtained were collated on an excel spread sheet and those who met the inclusion criteria were grouped into age groups, clinical presentations, predisposing factors and complications. These were statistically analyzed.

Ethical clearance was sought for this study and was obtained from ethical committee of our institution.

## RESULTS

The total number of children who were enrolled into the study was 253. One hundred and sixty nine (66.8%) were males while eighty-four (33.2%) were females with a Male: Female ratio of 2:1.

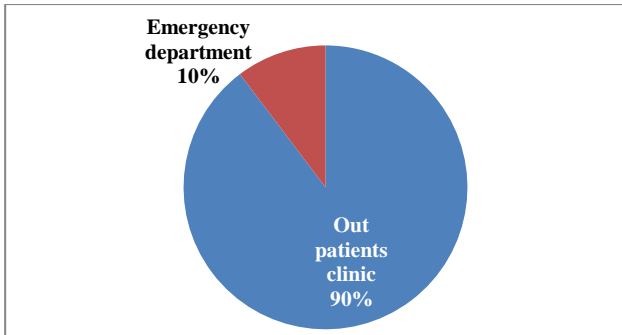
**Table 1: Age group distribution of the patients.**

Age group (in years)	Number of patients	Pathology
0-2	126	Adenoid only
2-4	61	Adenoid and Tonsils
4-6	27	Adenoid and Tonsils
6-8	22	Adenoid and Tonsils
8-10	17	Adenoid and Tonsils
<b>Total</b>	<b>253</b>	

Table 1 shows the age group distribution of the patients. The disorder was seen in all the studied age groups.

Figure 1 shows the pattern of presentation of the patients. 89.7% of the patients were seen in the outpatient clinic and 10.3% were seen in the children emergency.

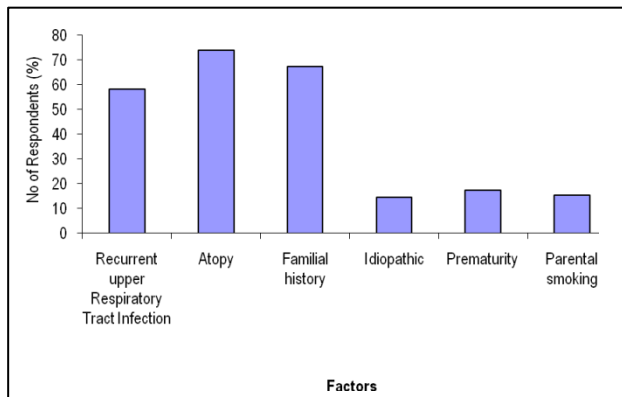
The order in which the parents or guardians sought for the first medical care is shown in Table 2 were family physicians, 54.5%; paediatricians, 36.4% then ear, nose and throat surgeons, 9.1%.



**Figure 1: Mode of presentation in hospital.**

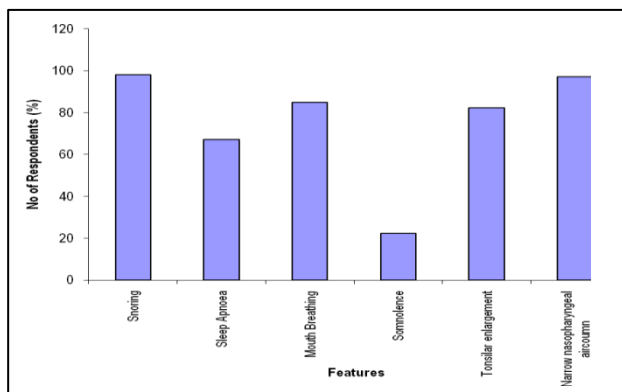
**Table 2: Pattern of seeking first medical care.**

First medical care	Percentage (%)
Family physician	54.5
Paediatrician	36.4
Otorhinolaryngologist	9.1
<b>Total</b>	<b>100</b>



**Figure 2: Predisposing factors.**

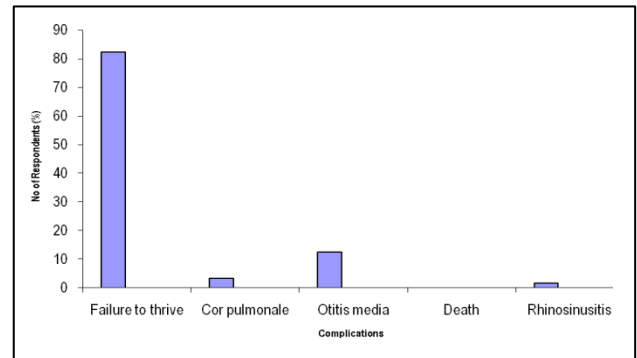
Figure 2 illustrates the common predisposing factors with atopy as the commonest 73.9%.



**Figure 3: Clinical features.**

The pattern of common clinical features is illustrated in Figure 3 with snoring and gross narrowing of the

nasopharyngeal air column on x-ray noted in over 95% of the patients.



**Figure 4: Complications of adenotonsillar hypertrophy.**

Figure 4 illustrates the complications seen among the patients with failure to thrive seen in 82.5% of the patients.

**DISCUSSION**

The results of this study showed that Adenotonsillar hypertrophy was found among all the children studied. This is similar to findings in other studies.<sup>18</sup> Adenotonsillar hypertrophy was found to be most predominant among pre-school children in most previous studies. It is adduced that at this age group, the tonsils and adenoid are in their largest size in relation to the underlying airway size.<sup>19,20</sup> In this study, adenotonsillar enlargement was most prevalent below the age of 2 years. This finding could be due to high incidence of upper respiratory tract infections in the study area.<sup>21</sup> Adenotonsillar hypertrophy is mainly a disease of the children.

In this study, there is a male preponderance.<sup>22</sup> Other research works showed equal affectation of females and males. While some studies found a female preponderance, others have also shown a male preponderance. Thus, it can be inferred that both sexes are at risk. However, males are more playful and may be more predisposed to recurrent upper respiratory tract infections.

Adenotonsillar hypertrophy has been reported to be due to persistent inflammation of tonsillar tissue with resultant hyperplasia.<sup>23,24</sup> This leads to marked obstructive symptoms as expressed in the studied patients. Marked nasal obstruction results in alternative mouth opening for airflow into the pharynx. Marked obstruction with associated cerebral hypoxia leads to muscular hypotonicity. This leads to turbulence in air flow with resultant snoring and/or noisy breathing.<sup>22</sup> Airway collapse leads to intermittent apnoeic attack. These findings were recorded in our study findings.

The X-ray findings in this study also reveal that a significant number of the patients had adenoid enlargement. This is confirmed by narrowing of the nasopharyngeal air column between an increased soft tissue mass density from the bony cervical spine with body of the sphenoid bone and palate below.

This study shows marked reactive and infective background among the studied population. The high incidence of recurrent infection, atopy, and family history of adenotonsillar hypertrophy had also been noted in other studies.<sup>25</sup>

Adenotonsillar hypertrophy with the resulting obstructive sleep apnoea syndrome when untreated can lead to serious morbidity. Some studies revealed high incidence of serious complications such as failure to thrive, corpulmonale with pulmonary hypertension due to obstructive sleep apnoea syndrome and mental retardation with poor academic performance due to chronic brain hypoxia.<sup>26</sup> These untoward effects of adenotonsillar hypertrophy are rare as evidenced in this study. The exception is failure to thrive which is common. This may be due to self-medication of upper respiratory tract infections or fever. Death as complication is very rare and not seen in this study population.

## CONCLUSION

Adenotonsillar hypertrophy is a otorhinolaryngological disorder common in our environment. It is common in children that all primary health care physicians, paediatricians and otorhinolaryngologists should have a good knowledge on this ailment. This disease burden can be prevented or reduced. Incidence of the associated complication can be abolished.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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