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Research

Clinical profile and pattern of adenoid hypertrophy among children attending a private hospital in Enugu, South East Nigeria.

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Abstract

Introduction: The objective of this study was to determine the pattern, clinical profile and surgical intervention in children presenting with adenoids hypertrophy in a private hospital. **Methods:** The study was conducted at the general pediatric clinic of a private hospital in Enugu, south east Nigeria in collaboration with a missionary hospital with a visiting consultant ENT surgeon. Data collection was done with structured Questionnaire. This questionnaire design contains information on age, sex, address, social class among others. The diagnosis of adenoid hypertrophy was made based on clinical evaluation, confirmed by a lateral radiograph of the neck and postnasal sinuses. **Results:** A total of 2010 children attended the children outpatient clinic, of these, 26 had adenoid hypertrophy; giving a prevalence of 1.3% .Mean age of diagnosis is 32.6±17.9 months. Cough 19 (73.1%), catarrh 18(69.2%), history of allergy 15(57.7%), fever 13(50.0%), Snorring10 (38.4%), expiratory rhonchi 5(19.2%), and mouth breathing 4(15.4%) occurred mostly among children with adenoids hypertrophy. Ten children were referred for surgery and this was successful, others are being followed up and placed on steroids and bronchodilators. **Conclusion:** The prevalence of adenoid hypertrophy in this study is 1.3% with male predominance and majority coming from a low social class. Surgical outcome is excellent except one who had bleeding but was arrested subsequently.

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Introduction

The adenoids, becomes obvious clinically when they undergo hyperplasia [1,2]. The nasopharyngeal tonsil becomes evident by about six months to one year of life, then gets larger in size during the first 6 to 8 years of life and generally shrinks by adolescence [2]. The etiology of the adenoid hypertrophy is not clear, however frequent infection, allergy, rhinitis and chronic sinusitis play important roles [2]. Prevalence of adenoid hypertrophy decreases with age, and is rare in children over 15 years due to physiological atrophy of the adenoid tissue [3,4]. Eziyi and colleagues had noted a prevalence rate of 7.7% among 600 primary school pupils while Marangu et al noted the prevalence of pulmonary hypertension in children with adenoid or adenotonsillar hypertrophy to be 21.1 % [5]. Adenoid hypertrophy does not appear to affect any gender or racial group more than another [4,6]. Adenoids has been noted to decrease as age increases and lowest among children from high socioeconomic class [4]. Adenoidal hypertrophy remains one of the most frequent indications for surgery in children especially when it produces nasal airway obstruction. Chronic sinusitis, recurrent otitis media with effusion, and chronic serous otitis media associated with pediatric adenoidal hypertrophy are common indications for surgical removal of the adenoid [6].

An untreated adenoid hypertrophy may lead to obstructive sleep apnea, ear problems, failure to thrive, pulmonary hypertension, and craniofacial anomalies [6]. Therefore, adenoidectomy with or without tonsillectomy is one of the most frequent procedures in otorhinolaryngology. The absolute size of the adenoid and the available space in the nasopharynx are the major factors which determine the severity of symptoms [7]. However physical examination provides little information about the size of adenoid, although enlarged tonsils may be proved easily.

Prevalence studies of adenoids hypertrophy are important as it helps to establish baseline rates, and to establish changes over time. This study is therefore aimed at determining the pattern, clinical profile and surgical procedures in children presenting with adenoids hypertrophy in a private hospital. They are also important for health services planning and evaluating children in populations with high risk. The study is also important as it may help to raise the awareness of surgical intervention in childhood.

There is paucity of studies from Enugu or South-East Nigeria in general. In addition, this is one of the very few studies done in a private setting. This study was thus designed to bridge this gap. It is hoped that this will add to the body of knowledge available on these disorders and may stimulate further research in the area on the subject.

Methods

The study was conducted at the general pediatric clinic of a private hospital in Enugu. The hospital provides care for children and also corroborates with a missionary hospital with a visiting Consultant ENT surgeon. All the cases were analyzed with a review of the records of all children attending the clinic over a three year period. Data collection was done with structured Questionnaire. This questionnaire design contains information on age, sex, address, social class among others.

The diagnosis of adenoid hypertrophy was made based on clinical evaluation, confirmed by a lateral radiograph of the neck and postnasal sinuses. The attending pediatrician assesses every patient that visits the clinic over the three year period, from which features suggestive of adenoids were further screened. The cases that needed surgical intervention after thorough evaluation and radiographic investigations were referred to an ENT surgeon.

Subjects whose ages were between 6months and 18 years were included in this study, while those subjects whose diagnoses were not proven by lateral radiograph of the neck and postnasal sinuses were excluded from the study. The families were assigned socioeconomic classes using the recommended method (modified) by Oyedeji [8]. Data was analyzed with SPSS version 17. Rates and proportions were calculated with 95% confidence intervals.

Results

A total of 2010 children attended the children outpatient clinic of the private hospital over the study period, of these, 26 had adenoid hypertrophy, giving a prevalence of 1.3% **Table 1**. Age group ranged from birth to 70 months. Fifty percent (50%) of children presented between the 13 and 36 months while the least age of presentation is between 49-60 months **Table 1**.

Out of the 26 cases 23 (%) were males and 3 (%) females. Male to female ratio was 7:1. The mean age of presentation is 32.6±17.9 months Cough 19(73.1%), catarrh 18(69.2%), history of allergy 15(57.7%), fever 13(50.0%), Snurring10 (38.4%), expiratory rhonchi 5(19.2%), and mouth breathing 4(15.4%) occurred mostly among children with adenoids hypertrophy **Table 2**.

Table 3 shows the outcome of children who presented with adenoids hypertrophy. Ten children were referred for surgery and this was successful, others are being followed up and placed on steroids and bronchodilators.

Discussion

We noted the prevalence of adenoid hypertrophy as 1.3%.This is at variance with the prevalence of 7.7% obtained by Eziyi et al [4] and that of Aydin [9] and colleagues who also documented a prevalence of adenoid hypertrophy in school children to be 27% among 5-7 years, 19.5% in 8-10 years and 19.9% in 11-15 year old children. Santos [10] et al also reported a higher prevalence of 66.4% in primary school children in Turkey. The difference in the prevalence of these studies is probably due to different instruments used, while Aydin diagnosed hypertrophy based on flexible nasoendoscopy, Santos made his own diagnosis based on questionnaires. We assessed and diagnosed our cases based on both clinical and determination of adenoid- to nasopharyngeal ratio parameter obtained from lateral soft tissue radiograph of the neck and post nasal sinuses. Other possible reasons for differences in prevalence rates obtained in these studies could be due to sample size, racial and geographical variables. For instance, Eziyi et al used a small sample size when compare to ours. The peak age of diagnosis of adenoids in this study is between 13-36 months while the mean age of presentation is 32.6±17.9 months. It is a known fact that adenoids are present at birth but becomes maximal in growth at about the age of 36 months and shrink at about 60 months [11]. In our study the maximal age for adenoid hypertrophy is about 60 months suggesting that most adenoids do degenerate at about this age However some adenoids can persist or even grow in size if there are enlargement causing nasal airway obstruction, which can result in obstructive breathing, obstructive sleep apnea symptoms, and chronic mouth breathing, recurrent or persistent otitis media and/or chronic sinusitis [12]. In such situations surgical removal becomes paramount. In this study 10 out of 23 patients underwent surgery for the above symptoms.

We noted in this study, features suggestive of atopy in majority of children with adenoids hypertrophy. These children presented with cough, snoring, expiratory wheeze, nasal blockage, expiratory rhonchi and prolonged expiratory phase on examination of the chest. Almost all the parents of these atopic children pointed out triggering factors such as cold, dust and living near poultry farms. Surprisingly, when we started these patients on steroids and bronchodilators they did very well and some never presented for surgery. Cagaay [13] et al noted that that there could be a cellular immune deficiency in atopic children, which effects the enlargement of the pharyngeal tonsils and adenoids. He stated a deficiency in T-helper 1 cell activity and interferon-gamma production as possible mediators. Several studies have reported increase in mast cells and allergic mediators in adenoids hypertrophy [14, 15]. Many authors have also noted the efficacy of steroids in the management of adenoids hypertrophy [15-17]. We did not perform any allergy test due to lack of facility.

The commonest symptoms presented by almost all our patients are cough, catarrh and snoring and mouth breathing especially at night. Long-term adenoidal enlargement can lead to ear disease and chronic mouth-breathing. There is some concern that chronic mouth-breathing in children may result in elongation of the middle part of the face and a narrow, high-arched palate that can result in orthodontic abnormalities [18].

We confirmed the diagnosis of adenoids in this study both on clinical and radiographic examinations **Figure 1**. Methods for evaluating adenoid size remain controversial and unsatisfactory in different centers. Many different ways, including lateral radiographs, fiberoptic endoscopy and acoustic rhinometry have been advocated as reliable in detecting the adenoidal hypertrophy [19-21]. Among these, the AN ratio, first described by Fujioka et al, is now the most frequently analyzed radiographic parameter in adenoid size assessment [22].

We also took tissue biopsy for histology in all our patients with adenoids. This revealed mucosal lymphoid tissue with pockets of purulent formation and many areas of reactive hyperplasia of B-cell with secondary follicles. This is in keeping with the study of Anita [23] et al who noted inflammatory adenoid tissues with lymphocytic, plasmacytic, or eosinophilic and polymorphonuclear infiltration of

the subepithelial stroma in his series. We noted that almost a half of children with adenoids hypertrophy belong to a lower social class. Eziyi [4] et al also noted similar findings in his study where close to a half of his subjects with adenoids belong to a low socio economic class. Parents of low socio economic class live in an overcrowded and highly dense environment; this may predispose their children who had adenoids to repeated viral and allergic infections which can worsen their state.

Conclusion

The prevalence of adenoid hypertrophy in this study is 1.3% with male predominance and majority coming from a low social class. Surgical outcome is excellent except one who had bleeding but was arrested subsequently. **Limitation:** this study was done in a private hospital. A study of this sort in a wider community will be worthwhile.

Competing interests

The authors declare no competing interests.

Authors' contributions

Dr. JMC had primary responsibility for protocol development, patient screening, enrolment, outcome assessment, preliminary data analysis, and writing of the manuscript. Dr. JMC and JOA also supervised the design and execution of the study, and performed the final data analyses. They also participated in the development of the protocol and analytical framework for the study, and contributed to writing of the manuscript. All authors have read and approved the final manuscript.

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Tables and figure

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Figure 1: Showing lateral radiograph of the neck

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Table 1: Age, gender and social class distribution		
Gender	**Frequency**	**Percentage**
Male	23	76.7
Female	3	10.0
Total	26	86.7
Age(months)	**Frequency**	**Percentage**
0-12	2	6.7
13-24	8	26.7
25-36	7	23.3
37-48	2	6.7
49-60	1	3.3
≥61	3	10.0
Total	23	76.7
Social class	**Frequency**	**Percentage**
Lower	8	30.8
Middle	5	19.2
Upper	4	15.4
No response	9	34.6

Table 2: Features of presentation of cases of adenoids hypertrophy		
Symptoms	**Number of case**	**Percentage**
Snoring	10	38.4
Cough	19	73.1
Mouth breathing	4	15.4
Expiratory rhonchi	5	19.2
History of allergy	15	57.7
Fever	13	50.0
Catarrh	18	69.2

Table 3: Outcome and management modalities of adenoids hypertrophy		
Number of cases of adenoids	**Management option**	**Outcome**
10	Medical management and then Surgical removal(curettage for adenoidectomy and dissection for the tonsillectomy) Histology showed mucosal lymphoid tissue with pockets of purulent formation and many areas of reactive hyperplasia of B-cell with secondary follicles	Bleeding complication(arrested by means of bipolar diathermy) After surgery, there were resolution of symptoms
16	Medical management alone (Use of steroids and bronchodilators)	No complications yet

Figure 1: Showing lateral radiograph of the neck