Introduction

One of the major causes of pediatric morbidity today at the community level is infection involving the ear, nose, and throat. Maximum of these patients respond well initially on general regular medications, but then recurrent complaints are not very uncommon. One of the major causes for such recurrence is hypertrophy of adenoids, the evaluation of which requires a battery of sophisticated investigative tools and expertise which are lacking at the community level. The aim of the study is to evaluate various symptoms related to adenoid hypertrophy and its correlation to the size of the adenoid seen in the lateral view nasopharyngeal X-ray. The aim of the study was to assess various symptoms related to adenoid hypertrophy and its correlation with the size of adenoid radiologically.

Methods:
A total of fifty cases of pediatric age with strong clinical suspicion of adenoid hypertrophy were included in the study. Through ENT examination was done. X-ray lateral view nasopharynx was obtained. Results: Adenoid hypertrophy was graded according to symptoms score and lateral cephalometric/radiographs. Snoring was the most frequent symptom which had a linear relation with the size of the adenoid.

Conclusion:
There was good agreement between symptom and the X-ray findings.

Keywords:
Adenoid, hypertrophy, snoring, symptom
The aim of the study is to evaluate various symptoms related to adenoid hypertrophy and its correlation to the size of the adenoid seen in the lateral view nasopharyngeal X-ray.

Materials and Methods

The study is a prospective study conducted in the Department of Otorhinolaryngology, Gandhi Medical College and Hamidia Hospital, Bhopal and Modern Institute of Medical Sciences, Indore.

A total of 50 cases of pediatric age (0–15 years) with strong clinical suspicion of adenoid hypertrophy were included in the study.

The clinical history was taken, and the symptoms were graded into four categories according to severity [Table 1].

Clinical evaluation

All patients were subjected to thorough ENT examination with special emphasis on anterior rhinoscopy, posterior rhinoscopy, and ear examination.

Radiological assessment by X-ray

X-ray nasopharynx lateral view was performed. The soft tissue shadow seen in the X-ray was quantified, and the sizes of adenoid in relation to the size of the nasopharynx were graded. The assessment was done based on the study by Cohen and Konak[1] [Table 2 and Figures 1, 2].

Results and Discussion

The total number of patients in the study was 50 out of which 36 were male, and 14 were female. Male:female ratio was 2.3:1. The findings are consistent with the study of Jóhannesson[2] and Wang et al.[3]

Eighty percent of the patients in this study belong to age group 6–15 years and only 10 patients were below 6 years of age, showing that chronic adenoid hypertrophy is still a disease of younger age group and affecting male predominantly.

Sixty-two percent of patients were having symptoms for more than 1 year, and the most common clinical symptoms were snoring which was present in almost all the cases of adenoid hypertrophy. Saedi et al.[4] and Mawson et al.[5] found similar findings in their study [Table 3].

Most common finding on anterior rhinoscopic examination was deviated nasal septum, and on posterior rhinoscopic examination was high-arched palate and enlarged tonsils with was consistent with the findings of Wang et al. [Figure 3].

The X-ray nasopharynx revealed 50% patients of severe hypertrophy with was consistent with the findings of the study by Kurien et al.[6] [Table 4 and Figure 4].

Conclusion

Adenoid hypertrophy was graded according to symptoms score and lateral X-ray nasopharynx; snoring was the most

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Table 1: Symptom grading

| Grade | Snoring         | Mouth breathing | Sleep apnea         | Otitis media     | Recurrent pharyngitis |
|-------|-----------------|-----------------|---------------------|------------------|-----------------------|
| 0     | Absent          | Absent          | Absent              | Absent           | Absent                |
| 1     | 1-2 night/week  | 1/4th-1/2nd of day | 1-2 night/week    | 1-3 episode/year | 1-3 episode/year      |
| 2     | 3-5 night/week  | 1/2nd-3/4th of day | 3-5 night/week     | 4-5 episode/year | 4-5 episode/year      |
| 3     | 6-7 night/week  | 3/4th to whole day | 6-7 night/week     | >6 episode/year  | >6 episode/year       |

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Figure 1: X-ray nasopharynx lateral view showing adenoid

Figure 2: Radiological assessment of adenoid on X-ray
frequent symptom which had a linear relation with the size of the adenoid.

The other symptoms such as mouth breathing and recurrent pharyngitis also had a good linear relation with adenoid hypertrophy.

A lateral nasopharyngeal radiograph is a noninvasive procedure which is well tolerated by children, and the study has shown that there is a significant relationship between symptoms and radiological findings of the children especially for assessment of adenoid in severe hypertrophy.

Thus children with classical recurrent symptoms of upper respiratory tract obstruction can be properly evaluated for adenoid hypertrophy with the symptom scoring and the lateral X-ray nasopharynx at community level even without any complicated or sophisticated investigative tools and proper otolaryngological expertise.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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