

THE PREVALANCE OF ALLERGIC RHINITIS IN 11-15 YEAR- OLD CHILDREN IN SHIRAZ (IRAN)

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Abstract - The first epidemiologic survey of childhood allergic rhinitis in Iran was carried out from May 1995 until April 1996. A questionnaire was distributed among 4584, 11-15 year-old children of both sexes, to be completed under supervision of medical students. Nasal smears were collected from the cases with allergic rhinitis (n=445, 5.8%), and from 340 healthy children for comparison. Significant nasal eosinophilia was present in 62% (274) of the children with allergic rhinitis. Classic allergic rhinitis was seen in 226 cases. In conclusion, allergic rhinitis is one of the major health problems in Shiraz school children. Eosinophilia of nasal secretions has a specificity of 96% and sensitivity 62%, and seems to be somewhat valuable as a screening test for nasal allergy.

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Key words: Allergic rhinitis, nasal eosinophilia

INTRODUCTION

Allergic rhinitis is the most common chronic disease suffered by humans (1). It causes significant morbidity, which results in the expenditure of millions of rials. It may be seasonal and/or perennial. The onset of allergic rhinitis occurs most commonly during adolescence or young adulthood. The single most important risk factor is a positive family history of allergic disease. Interestingly, there has apparently been an increase in the occurrence of allergic rhinitis in the last two decades. The diagnosis of allergic rhinitis is clinical; two symptoms or a combination of sign(s) and one symptom on most days (>1 hour) for longer than two weeks at time, are needed (2 - 5).

MATERIALS AND METHODS

We surveyed 4584 children aged 11-15 years of

both sexes from 8 schools at different districts of Shiraz. The study was done during four seasons, from May 1995 to April 1996. A questionnaire about symptoms of rhinitis (rhinorrhea, obstruction, sneezing, and itching of nose) was distributed to children to be completed by their parents or by themselves with the help of two medical students. Nasal appearance was examined by anterior rhinoscopy, special consideration was given to colour, swelling and wetness of the mucosa, and the presence of the transverse crease of external nose. A sample of nasal secretion was taken. This sample was rolled on to glass slide and air - dried, then Wright staining was done. The sampling and staining were done by one laboratory technician, who was trained for the job.

All slides were examined under light microscope with a $\times 100$ immersion objective by one cytologist. The case histories were not known to the microscopist. In the examination of the smears for eosinophils and neutrophils, the findings were classified according to the following semi-quantitative scale:

Normal (1+), few scattered cells or < 10 cells / High power field (HPF) or <5 percent of HPF. *Mild (2+)*, many scattered cells or 10-30 cells / HPF or small clumps. *Moderate (3+)*, numerous cells or large clumps but not covering the entire microscopic field. *Marked (4+)*, numerous cells or large clumps covering the entire microscopic field.

The questionnaire was designed to rule out infectious rhinitis, and to establish the diagnosis

of allergic rhinitis. Diagnosis of the latter was made when there were two nasal symptoms for longer than two weeks, positive findings on physical exam (bluish or whitish nasal mucosal color change, wetness or swelling of the mucosa, and presence of nasal crease), with 2+ or more nasal eosinophilia. The data were tested for statistical significance by the Chi square test.

RESULTS

According to diagnostic criteria mentioned earlier, 445 children (9.7%) had clinical allergic rhinitis. Sixty two percent of these children had significant eosinophilia in nasal secretions. In this survey, allergic rhinitis was slightly more common in the boys, in older children, and during spring and summer time.

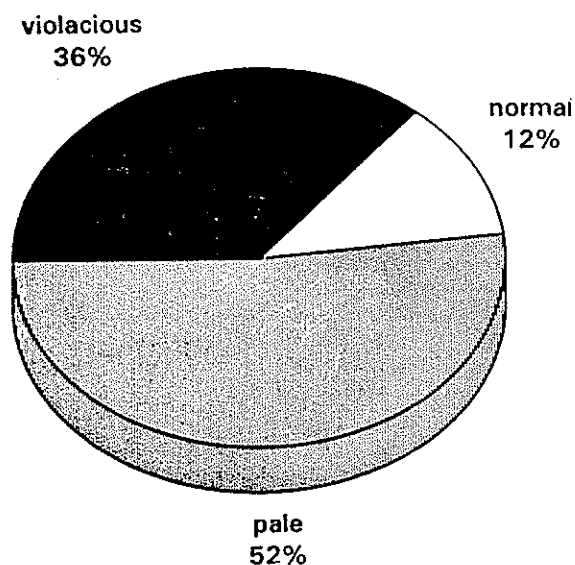


Fig. 1. The distribution of mucosal colour of proven allergic rhinitis in Shiraz school children.

Table 1. Distribution of eosinophils in nasal secretions

	Smear eosinophilia (6 + 2)	
	Present No (%)	Absent No (%)
Patients	274 (62)	171 (38)
Controls	13 (4)	314 (96)

(P<0.002)

Clinical Findings

In proven cases, rhinorrhea and obstruction werw seen 92% and 84%, respectively. The colour changes of nasal mucosa (88%) and mucosal swelling (60%) were the most common signs of proven allergic rhinitis. The distribution of nasal signs and symptoms did not differ markedly with age, sex or season. In 52% of children with allergic rhinitis the mucosa was pale, 36% violacious, and 12% of these patients had normal mucosal colour (Fig. 1).

There was a highly significant association between allergic rhinitis as defined, and the presence of eosinophils in the nasal smear as shown in Table 1.

DISCUSSION

As in other studies, we used clinical criteria for identification of subjects with nasal allergy. All studies reveal that allergic rhinitis is a major health problem of children, which is true in Shiraz as well. According to Table 2, all studies reveal that about 10 percent of the children have nasal allergy. The occurrence of nasal eosinophilia was not significantly associated with age, sex or season allergic response and release of eosinophilic chemotactic factor (ECF) are not affected by these factors. However, a significant correlation was observed between nasal eosinophilia, and nasal cytology in allergic rhinitis and control subjects. The reported frequency of significant eosinophilia in bealthy subjects does not differ in various studies, but there is a discrepancy in the latter in allergic rhinitis as reported by different investigations, which may be

related to the number of subjects, method of sampling (nose-blowing vs nasopharyngeal swabbing), staining (Giemsa vs Hansel or Wright), definition of significant eosinophilia, and microscopists experience. 38 percent of allergic rhinitis (by clinical criteria) have not significant nasal eosinophilia. It seems to be related to the late appearance of eosinophils in secretions in mild cases of nasal allergy. Infection may cause a temporary disappearance of eosinophils from the secretion of persons with nasal allergy. Conversely, it may cause a small number of eosinophils to appear in the nasal secretion of non-allergic persons. The effects of drugs, foods, exercise and emotion, on the appearance or disappearance of eosinophils in the nasal secretions need further studies. A comparison between the grading of eosinophilia in this study and Miecznik's (4) study from Poland is shown in Figure 2. The results were similar during remission, but not exacerbation, because our study was carried out in schools, during different seasons, and in a cross sectional manner, while the Polish study was based on patients referred to

allergy clinics because of exacerbation.

One of the aims of this study was to evaluate the usefulness of nasal smear as a screening test for nasal allergy. Nasal eosinophilia was present in 62% of children with clinically labeled allergic rhinitis, indicating a diagnostic specificity of 96%. However, nasal eosinophilia, has a moderate sensitivity for the diagnosis of allergic rhinitis. This valid test that can be quickly and easily performed and interpreted. As such, it can serve as a useful adjunct to the diagnosis of allergic rhinitis.

Table 2. A comparison between the prevalence of allergic rhinitis in different countries

Country	year of study	Age range	Prevalence(%)
Australia	1972	6-15	(15)
America	1981	5-15	(8.5)
England	1982	5	(5.3)
Switzerland	1984	6-15	(6.1)
Finland	1978	6-18	(13)
Turkey	1992	6-12	(15.4)
Iran(Shiraz)	1995	11-15	(9.7)

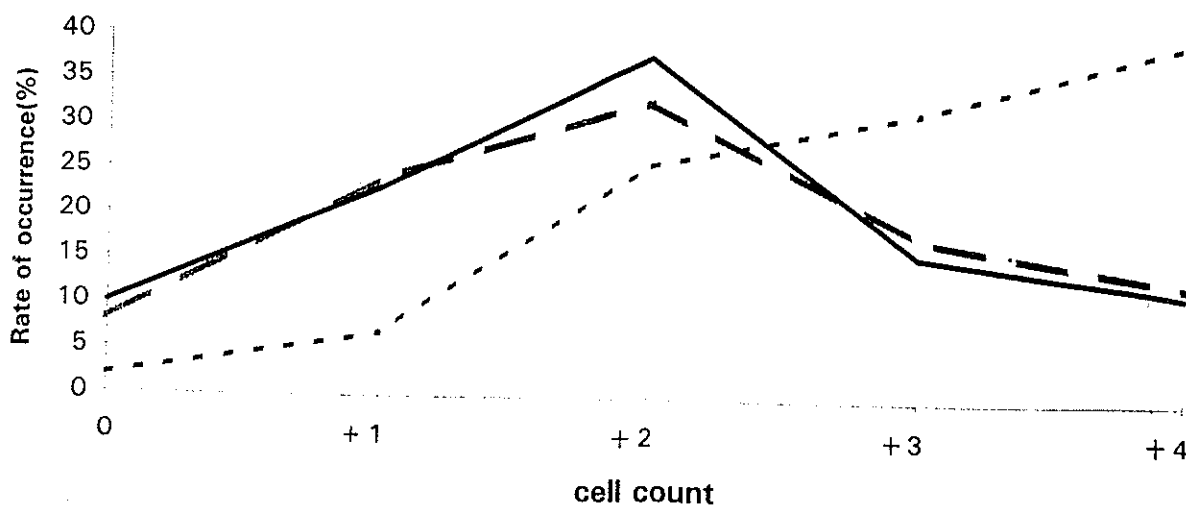


Fig. 2. A comparison between eosinophils counts of nasal smears of Iran (Shiraz) and Poland

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