# A study on perennial rhinitis in Kelantan

S. Elango, M.S., D.L.O.,
*Lecturer*

G.N. Purohit, M.S.
*Lecturer*

*S.C. Gan, M.Sc., Dip. Ed.

Zahara Manap, MBBS
*Medical Officer*

Hilmi Raza, MBBS
*Medical Officer*

*Department of E.N.T.*
*Hospital Universiti,*
*School of Medical Sciences,*
*Universiti Sains Malaysia.*

**Institute of Medical Research,*
*Kuala Lumpur.*

## Summary

Ninety five patients with perennial rhinitis were examined clinically and various investigations were done in order to find out the common allergens and to assess the value of various tests in perennial rhinitis. In this study group 94% of cases were proven to be cases of allergic rhinitis. Cat fur was found to be the commonest allergen. Grass pollen which is a common allergen in European countries was found in only 18% of cases in the present study. X-ray of the paranasal sinuses as a routine investigation was not found to be of much use in perennial rhinitis. There was significant correlation between results for allergens tested by enzyme immunoassay and skin prick test.

*Key words*: Perennial rhinitis, allergic rhinitis, clinical findings, investigations.

## Introduction

Perennial rhinitis is a condition wherein patients have symptoms like nasal discharge, sneezing, blockage and itchiness throughout the year. It is classified mainly into allergic rhinitis, vasomotor rhinitis and non allergic rhinitis with eosinophilia syndrome (NARES). Other causes for perennial rhinitis may be exposure to dust, fumes and irritant vapours.

Allergic rhinitis is an IgE mediated hypersensitivity disease of the mucous membranes of the nasal airways characterised by sneezing, nasal blockage and nasal discharge.[1] Allergic rhinitis is commonly found in association with exposure to aero allergens. A minority of susceptible individuals develop a similar syndrome following ingestion of certain foods. Allergic rhinitis may be seasonal or perennial. Seasonal allergic rhinitis is allergy to the pollens of grasses, flowers, trees and shrubs. Perennial allergic rhinitis is caused by house dust, house dust mite and moulds. The common food allergens are sea foods (crab, shrimps), cows milk, proteins, eggs etc.[1] The incidence of allergic rhinitis varies from country to country. The common allergen also changes from place to place. About 10% of the patients attending Hospital Universiti Sains Malaysia (HUSM) ENT Clinic were cases of allergic rhinitis. The aim of this study was to find out the incidence of allergic rhinitis in HUSM, Kelantan, to find out the common allergens and to assess the value of various tests in perennial rhinitis.

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## Materials and methods

Ninety five consecutive patients with perennial rhinitis seen in the Otolaryngology Department, Hospital Universiti Sains Malaysia, Kota Bharu, were included for the study. The admittance criteria was symptoms of rhinitis (nasal obstruction, serous or mucous nasal discharge and sneezing attacks) every or every second day of the week for one year or more. As a control 15 cases without atopy were also included in the study.

A detailed history was elicited from each patient including family history, history of other atopic diseases, specific factors increasing the symptoms and history of specific contacts. A thorough otorhinolaryngological examination was also performed.

The following investigations were done.

1. Total white cell count.
2. Absolute eosionophil count.
3. X-ray of paranasal sinuses (occipito mental and lateral view).
4. Skin prick test.

Allergen skin prick test were done for twelve common allergens (Straw dust, Candida albicans, Penicillium Notatum, house dust, house dust mite (D. Pteronyssinus), poultry feather, cat fur, whole egg, grass pollen (phargmites communis), lobster, crab, shrimp) along with control solutions. Bencard prick test solutions supplied by Bencard Brentford, England were used. Strength of each reaction was recorded as recommended by Patterson[2] as varying from zero to four plus. The skin prick test was performed on the volar region of the antebrachium and read after 15 minutes. Antihistamines were withdrawn 72 hours before the test.[3]

5. Enzyme Immunoassay:

For this assay the Allercoat EAST conjugate pack supplied by Kallestad diagnostics were used. It is an alkaline phosphatase enzyme labelled antiserum to human IgE for use in these tests and it replaces the Iodine 125 labelled antiserum. A spectrophotometer measures the colour intensity giving an indication of the level of allergen specific IgE antibodies present in the test sample. Positive results were graded into four classes depending upon the antibody titre.

## Results

Age and sex distribution of the subjects is presented in Fig. 1. Sixty two percent of the subjects were males. Peak incidence of allergic rhinitis was found in the third decade.

One of the common presenting symptom in this study group was rhinorrhoea (94%) and almost all the cases (98%) had mucoid discharge characteristic of allergy; 46.3% of patients had a family history of atopy, pointing to the genetic predisposition to atopic diseases.

House dust was one of the common specific factors increasing the nasal symptoms and was seen in 71 patients. Nasal polyp was found in 4.2% of the study group and turbinate hypertrophy in 79%. Absolute eosinophil count was raised in 42.1% of the cases.

X-rays of the paranasal sinuses were abnormal in 58.9% of patients. The commonest abnormality noted was haziness (41%) followed by mucosal thickening in 16.8% of patients. In one patient fluid level was found in the maxillary antrum (Fig. 2).

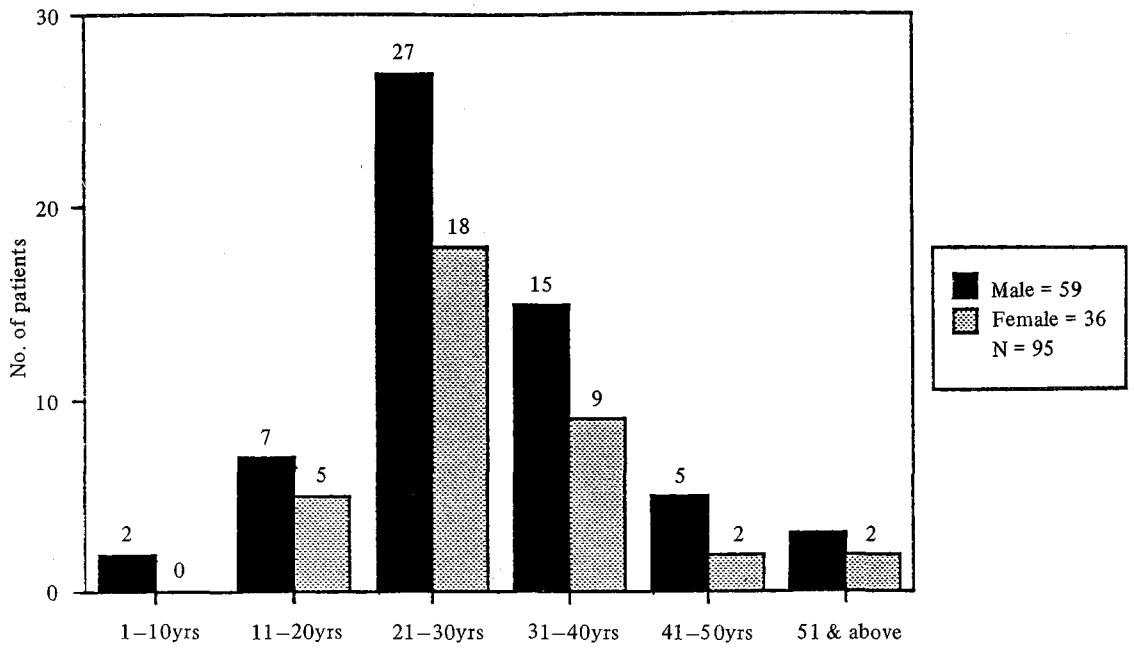


Fig. 1 Age and sex distribution of subjects with perennial rhinitis.

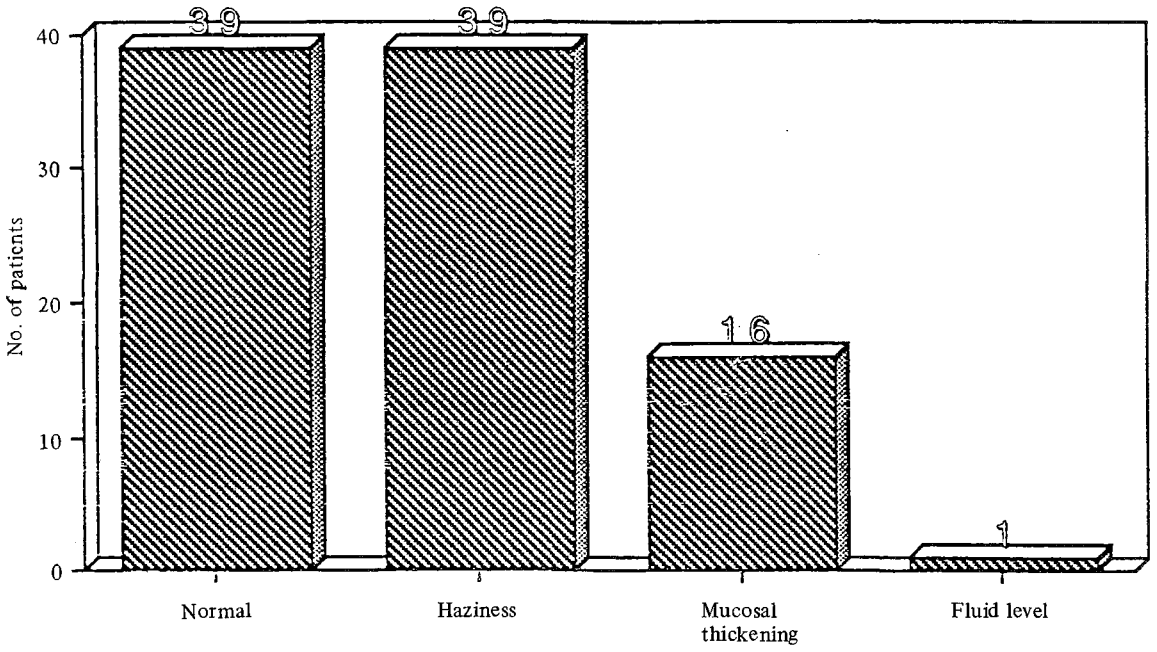


Fig. 2 X-ray findings in patients with perennial rhinitis.

Skin prick test was positive in 89 patients (93.6%) and negative in six patients. Of these six patients, three patients had raised absolute eosinophil count. Of the 89 patients having positive skin test, four patients had positive reaction to only one allergen; five patients had positive reaction to two allergens and 80 patients had positive reaction to more than two allergens. Sixty three patients had positive reaction to food alllergens. The cat fur was found to be the commonest allergen, followed by poultry feather, house dust and house dust mite (Fig. 3). Grass pollen was found in only 18% of cases.

Enzyme immunoassay was positive to house dust mite in 66.6%, cat fur in 50.8% and Candida albicans in 42.6% of cases. These was significant correlation between enzyme immunoassay and skin prick test for house dust mite ($p - 0.0001$), cat fur ($p - 0.0001$) and Candida albicans ($p - 0.006$) (Kendall's Coefficient of Concordance).

Based on these investigations, 94% of patients were grouped to be cases of allergic rhinitis. Three percent vasomotor rhinitis and 3% non allergic rhinitis with eosinophilia syndrome (NARES).

## Discussion

In agreement with other published reports the peak incidence of allergic rhinitis in our patients was also in the third decade. There is a male predominance in the incidence of allergic rhinitis in our study group (62.1%) like that reported from Saudi Arabia.[4] The reason for this sex difference is not known but IgE in blood is higher among boys than girls right from birth.

Incidence of nasal polyp in this study group (4.2%) is similar to the findings reported by Binder.[5] The incidence of turbinate hypertrophy is higher in the study group, 79% compared to 71% reported by Binder.

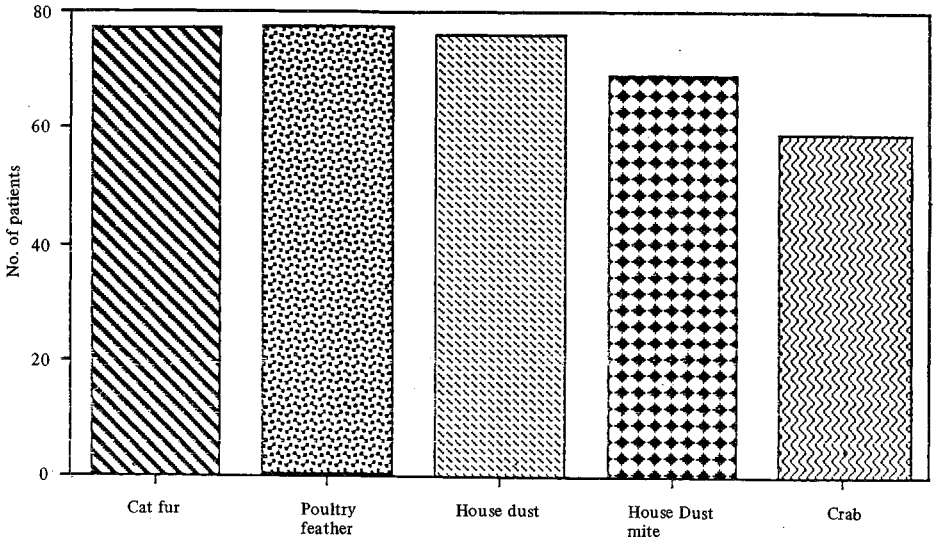


**Fig. 3 Common allergens in perennial rhinitis as confirmed by positive skin tests.**

Absolute eosinophil count was raised in 42.1% of the study group compared to 20.5% reported by Binder and 50% reported by Sorensen.

Pathological x-ray changes were seen in 58.9% of our patients compared to 53.4% reported by Binder. Although pathological changes were seen in the x-ray sinuses in more than 50% of the patients the majority of these cases did not have symptoms of sinusitis. In this group antral wash was done only in four patients.

Therefore x-rays of the paranasal sinuses in the allergic rhinitis patients is not necessary and it can be reserved for patients who have symptoms of sinus disease. Out of the 89 patients having positive reaction to skin prick test, 63 patients had positive reaction to food allergens. In all these cases there were associated inhalant allergens, so testing for food allergens alone is of limited value. The common allergens causing allergic rhinitis are cat fur, poultry feather, house dust and house dust mite. Cat is one of the common pet animals in Kota Bharu and so it is not surprising for cat fur to be the commonest allergen. The relative humidity in Kota Bharu is usually very high and varies from 80% to 95% (data from Perkhidmatan Kaji Cuaca, Malaysia). The mean humidity of 82.6% and mean temperature of 26.7°C in Kota Bharu, provide an optimum growing condition for the common house dust mite through out the year. The house dust mite and house dust were also found to be the common allergens in two other studies done in Malaysia.[6,7] Grass pollen which is a common allergen in European countries was found in only 18% of cases.

There was a significant correlation between the results for allergens tested by enzyme immunoassay and skin prick test. Combined use of enzyme immunoassay and skin testing gives more information than either test done alone. For a precise diagnosis of allergic rhinitis, case history, skin test and enzyme immunoassay are all important.

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