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## **THE ROLE OF ALLERGIC RHINITIS IN THE AETIOLOGY OF NASAL POLYPS**

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### **Abstract**

Despite the prevalence and long history since nasal polyps were recognized as a clinical entity, many questions still exist with respect to their aetiology & pathogenesis, this study aims to assess the role of allergy in the aetiology of nasal polyps based on their epidemiology in Basrah governorate in Iraq & by utilizing the skin test, from January 2000-december 2000 84 patients with simple nasal polyps 50 males & 34 females with age range between 18-70 years were studied by collecting data regarding the history, physical examination & investigations in a questionnaire form .88 normal subjects were also included as a control group. Both patients & controls were subjected to intradermal skin test using seven common aeroallergens.

Out of the 84 patients 58 (69%) had a positive skin test to one or more of the tested allergens, while only 20 (23%) of the control group had a positive test. This difference is statistically significant ( $p < 0.00001$ ), odd ratio=8.0 which means allergic persons were 8 times more prone to have polyps than normal subjects.

Allergy appears to play an important role in the aetiology of nasal polyps and the skin test is useful in the assessment of patients with polyps who may therefore benefit from immuno therapy.

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### **Introduction**

**N**asal polyps are the most common mass lesion encountered in the nose<sup>1</sup> & are an easily recognizable clinical entity as the simple nasal polyps are typically bilateral, multiple, soft, smooth semi translucent, pale bags, yellow-grey structure. Simple nasal polyps arise at any time after age of 2 years but usually after the end of 1<sup>st</sup> decade of life<sup>2</sup>.

Despite the prevalence and long history since nasal polyps were recognized as a clinical entity, many questions still exist with respect to incidence & aetiopathogenesis, there is no single predisposing factor that can account for the formation of nasal polyps in all patients, medical & surgical therapy has to be directed toward the inflammatory process (both infectious & non infectious).

Association between nasal polyps & various other conditions like asthma,

aspirin hypersensitivity & cystic fibrosis has been noted. Allergy was commonly thought to be a major cause and is implicated because of three factors: the histological picture where 90% or more of nasal polyps have an eosinophilia, the association with asthma, finally the nasal physical findings which may mimic allergic symptoms & signs.

This study aims to explore the association of nasal polyps with allergy & assess the importance of skin test as a part of the investigations performed to the patients, with nasal polyps & to clarify the epidemiology of nasal polyps in Basrah province.

### **Patients & methods**

This prospective study was performed in the department of otolaryngology in Al-Basrah General Hospital and Al-Basrah center for allergy and asthma

for the period from January 2000 to December 2000.

Eighty-four patients with simple nasal polyps were included in the study, out of them 50 (60%) were males & 34 (40%) were females with ratio of (1.5:1) and the age range between (18-70 years) with average of 39.46 years.

Eighty eight of normal subjects, (regarding nasal polyps and allergic rhinitis) were included in study as a control group 55 males & 33 females, aged between 15 -53 with an average of 36 years.

Data concerning the patient's history, clinical examination and investigations were collected in a specially constructed questionnaire form.

Both patients and controls were subjected to skin tests at Al-Basrah center for allergy and asthma, using intradermal test which was performed through #26 gauge needle to inject intradermally a small amount of antigen 0.05ml with concentration of extract of about 1:1000, using seven common aero allergen (house dust mite, house dust, feather, grass pollen, candida, mould, date palms pollen)<sup>3</sup>, the test was read after 15 minutes and considered positive when the wheal was more or equal to 3mm in diameter with surrounding erythema.

When there was a suspicion of false negative or positive test, the test had to be combined with either positive control (histamine) or negative control (glycerin)<sup>4</sup>.

## Results

This study revealed that the highest number of patients was in age group (30-39) as shown in (table I) and out of all our patients 61 (73%) live in urban areas while the remaining 23 (27%) in rural areas. Also we found that 27 (32%) of patients were house wives & 16 (20%) workers in chemical factories. (table II).

More than half of the patients with nasal polyps presented at late summer; 15 (18%) at August, 22 (26%) at

September & 12 (14%) at October. (figure 1)

Most of patients presented with nasal obstruction (98%), rhinorrhoea (83%), post nasal drip (75%) & loss of smell (74%) (table III).

Regarding the correlation of nasal polyps with other diseases fifty six (67%) of the patients in our study gave past history of allergic rhinitis many years before their presentation with nasal polyps; thirty nine (70%) of them with seasonal rhinitis & 17 (30%) with perennial rhinitis. bronchial asthma was present in 28 (33%) of patients out of them 24 (86%) had adulthood onset asthma & the other 4 (14%) had childhood onset asthma.

Four (5%) out of total number included in the study gave a history of aspirin intolerance, of those 2 (2%) had the characteristic ASA triad.

Twenty five (30%) of patients with nasal polyps have positive family history of nasal polyps.

Our study shows 58(69%) of patients included in the study had a positive skin test to one or more of the tested allergens, while only 20 (23%) of the control group had a positive test. This difference is statistically significant ( $p < 0.00001$ ), odd ratio=8.0, which means allergic persons were 8 times more prone to have polyps than normal persons (table IV).

Among those patients with positive skin test, a large number gave hypersensitivity to house dust mite 39 (67%) while a small number 5 (9%) to date palms pollen.

## Discussion

The incidence of nasal polyps appears to be related to the sex and age of the patient. (Moloney1977)<sup>5</sup> studied 445 patients with polyps and reported that the ratio of men to women was 2:1 and average age was 39 years, (Drake-Lee-1997)<sup>6</sup> showed a figure range between 2:1 and 4:1 from two different studies and mostly seen in middle age group.

In our study the ratio was 1.5:1 with male predominance and average age was 39.46 years, with about 91% of patients presented between 3<sup>rd</sup> and 6<sup>th</sup> decade, these results agree with the above studies.

Seventy three percent of patients in the study were from urban areas this is probably due to increased atmospheric pollution in these areas and also many patients from rural areas can not afford the higher cost of specialist medical services in the city center where our study was done and rather have some sort of medical treatment and minor surgical procedures by general practitioners in their areas

The high number of housewives 27(32%) that had nasal polyps in this study is probably because of the longer periods in which they are exposed to allergens like house dust mite, and other irritants such as washing powders and flour as well as the heat and smoke of the stoves used for baking bread which became more popular during the period of the embargo on Iraq because it is cheaper to bake bread at home than buying it from a bakery. The few farmers in this study may reflect the urban residency of most patients.

In our study 71(86%) of patients presented between May & October with the peak at September. (Colloff et al, 1992)<sup>7</sup> shows that in temperate climates, the most common time of presentation of allergic rhinitis is the late summer months as the number of house dust mite & fungi spores increases during these humid months. The same peak of presentation between nasal polyps in our study and that of allergic rhinitis may be attributed to that allergy play a role in pathogenesis of polyps.

The most common mode of presentation was nasal obstruction (98%), this agrees with (Drake-Lee, 1997)<sup>6</sup>, while only (40%) complained of sneezing in spite that (67%) of patients gave past history of allergic symptoms including sneezing, this

decrease in incidence of sneezing with progress of disease explained by the fact that the nasal obstruction leads to a reduction in the exposure of the nasal mucosa to the aero allergen that provoke sneezing & other allergic nasal symptoms

The association of nasal polyps & asthma has long been accepted and has been reviewed by (Moloney 1997)<sup>5</sup>, who found that 95(21%) of 445 patient have co-existing asthma & the greater number of patients with this association were women.

(Brown et al 1979)<sup>8</sup> found that 513 (31%) out of 1660 patient had asthma while (Settipone 1996)<sup>9</sup> gave a lower incidence of (7%). This study shows that out of 84 patient 28 (33%) have coexisting asthma and this slightly higher incidence may be attributed to the high number of women included in the study.

The incidence of aspirin hypersensitivity in our study is about (4%) which is slightly lower than that reported by other studies like (Moloy 1977)<sup>5</sup> who report 6% this result may be explained by the steady decrease in the use of aspirin in recent years due to it's known side effects and the presence of effective alternative drugs especially in places like Basrah where G6PD deficiency is prevalent.

In our study 30% of patients had positive family history of nasal polyps and this figure is slightly higher than that reported by (Greisnen and Settiane 1996)<sup>10</sup> which was (14%), this higher percentage may be explained by the larger families in our society as compared with families in western society.

Regarding the type of allergen reported in allergic patients, (Colloff et al 1992)<sup>7</sup> stated that world wide the commonest cause of perennial allergic rhinitis is allergy to house dust mite and on the other hand (varney, 1991)<sup>14</sup> reported that seasonal allergic rhinitis is most commonly due

to allergy to grass pollen. In our study the most frequent aero allergen was house dust mite (67%), followed by house dust (45%) and feather (43%) Using positive skin test as an indicator for allergy in patients with nasal Polyps. (Delany, 1976)<sup>11</sup>, (Molony 1977)<sup>5</sup>, (Busuttil 1978)<sup>12</sup>, (pumhirum et al 1996)<sup>13</sup> showed 10%, 64%, 44%, 60% respectively of patients with nasal polyps had positive skin test.

In our study 58 out of 84 patients with nasal polyp (69%) showed positive skin test which is a figure near the upper limit of the range of the reported indices of allergy among patients with

nasal polyps in the previous studies.

This variation in the incidence of allergy among the populations of patients with nasal polyps may be attributed to the difference in the size of patients population sample, the difference in the age and sex of population and to the residency of the patients, with special contribution of the latter factor in our study as the area in which our study was conducted had in the last two decades a great increase in pollution as an adverse effect of the wars on nature in terms of chemical pollution and destruction of the green lands in the south of Iraq.

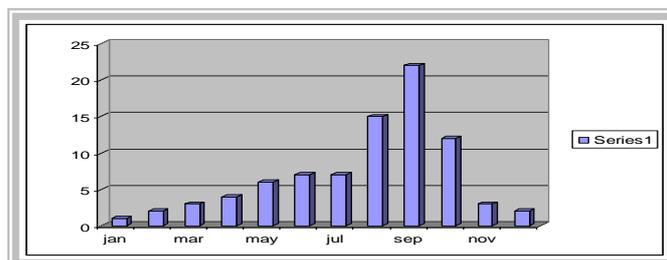
**Table I:**

years	No. of patients	%
10-19	2	2%
20-29	18	21%
30-39	23	28%
40-49	19	23%
50-59	16	19%
60-69	4	5%
>70	2	2%

**Table II: occupation of patients with nasal polyp**

occupation	No. of patients	%
Housewife	27	32%
Workers(chemical Factories)	16	20%
Teachers	7	8%
Workers(manual	6	7%
Officials	6	7%
Farmer	5	6%
Retired	4	5%
Soldier	4	5%
Student	3	4%
Business man	2	2%
Driver	2	2%
carpenter	2	2%

**Figure 1: time of presentation**



**Table III: The mode of presentation of nasal polyp**

complaint	No. of patients	%
Nasal obstruction	82	98%
Rhinorrhoea	70	83%
Post nasal drip	63	75%
Loss of smell	62	74%
Sneezing	40	48%
Headache	39	46%
epistaxis	3	4%

**Table IV: incidence of allergy in nasal polyps and controls.**

	Total no.	(+ve) skin test	%
<i>Nasal polyps</i>	84	58	69%
<i>control</i>	88	20	23%

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