

Original Article

Association between allergic rhinitis and sino-nasal polyposis

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Abstract:

Objective: To investigate the role of allergy in nasal polyposis.

Methods: 60 patients of nasal polyposis were selected randomly in a multicentric prospective trial from July 2006 to July 2008. Data were collected from the patient by personal interview, clinical examination and laboratory tests in a prescribed protocol. Socio-demographic character and presentation of the samples were studied and according to the symptoms of allergy those were submitted to skin prick test with a large series of seasonal and perennial airborne allergens. Results were presented in a tabulated form.

Results: The incidence of nasal polyposis was highest among the people of 5th decade (40%) with male predominance (53.33%). The majority of the patients came from rural area (76.67%) and most of them were farmer (50%) and came from relatively poor class (73.33%). All the patients presented with significant nasal obstruction (100%). Next common presentations were running nose 90%, headache 80%, sneezing 70% and nasal itching 40%. Severity of symptoms increased with the exposure of national allergens (20%), food allergens (30%) and drugs (3.33%). 10% of patients were suffering from bronchial asthma. 20% patients with nasal polyposis were positive on Skin prick tests (SPT) with airborne allergens. A review of the clinical histories of SPT-positive patients revealed the presence of obstructive rhinitis and chronic rhinorrhea in most cases, whereas acute symptoms, such as sneezing and itching, were reported by a minority of subjects.

Conclusion: Clinically evident respiratory allergies, particularly to perennial airborne allergens, play a relevant role in the pathogenesis of nasal polyposis.

Key words: Allergic rhinitis; nasal polyposis.

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Introduction:

Allergic rhinitis is an IgE-Medicated inflammation of the mucous membrane of the nose occurring due to exposure to an inhaled allergen like pollen dust, moulds, fungi and animal dander. It is characterized by the typical symptoms of sneezing, rhinorrhea, nasal obstruction and itching of the nose. It is conventionally classified into seasonal, perennial and occupational. Seasonal allergic rhinitis is caused by pollens from trees, weeds or grass and manifests with symptoms at specific seasons every year; Perennial allergic rhinitis is caused by house dust mites, moulds, fungi, pet dander or

cockroach, is characterized by perennial symptoms of allergic rhinitis and occupational rhinitis is caused by exposure to a product in the work place. Common triggering substances like baker's flour, iso-cyanates, wood dust and animal allergens.¹

Allergic rhinitis has a high prevalence rate of about 15-20%.² In Bangladesh 20% of school going children suffer from allergic rhinitis.³ Most cases are caused by pollen allergy, having a seasonal occurrence. In striking contrast to nasal polyposis, which is a disease of middle aged people, allergic rhinitis occurs with its highest prevalence in children and young people and the clinical significance of the diseases decreases with age.⁴

Nasal polyps have long been associated with rhinitis and asthma. However, the role of allergy in the aetiology and pathogenesis of nasal polyps is a controversial issue. It has been postulated that allergy is an aetiological factor for nasal polyposis. If this is so, then it can be expected that allergic patients will have polyps more often than a control population and that patients with polyps have an increased occurrence of positive allergy testing.⁵ Caplin and co-workers examined 3000 consecutive atopic patients and found that only 0.5% had polyps.⁶ A study reported a 4.5% incidence of nasal polyps in 300 patients with allergic rhinitis.⁷ In the literature it was found that only 0.1% of paediatric patients attending an allergy clinic had nasal polyps.⁸ Thus the prevalence of nasal polyps in allergic patients is low, usually under 5% which is similar to that of the general population.

However other series stated that - a clinically slight respiratory allergy, particularly to perennial airborne allergens, might play a relevant role in the pathogenesis of nasal

polyposis, probably through the induction of a long-lasting inflammation of the nasal mucosa.^{5, 9}

Methods:

The study was a multicentric, conducted at the department of Otolaryngology – Head & Neck Surgery of Dhaka Medical College Hospital (DMCH), Bangabandhu Sheikh Mujib Medical University (BSMMU), Shaheed Suhrawardy Medical College Hospital (ShSMCH) and Rajshahi Medical College Hospital (RMCH), Bangladesh. This prospective study was conducted between July 2006 and July 2008. Sixty (60) patients suffering from ethmoidal polyposis of all age and sex groups were selected. Patients of antro-choanal polyp and neoplastic polyps were excluded from the study. Data were collected from the patients by personal interview, clinical examination and laboratory tests in a prescribed protocol and analysed with the help of SPSS for windows. The objective of the study was to find out the association between allergic rhinitis and sino-nasal polyposis.

Results:

Out of 60 patients lowest age was 16 years and the highest was 60 years. The highest incidence was at 5th decade (40%) and the lowest in the 2nd decade (6.67%). 50 (83.33%) patients were male and rest were female. The male female ratio was 5:1. 46 (76.67%) patients were from rural area whereas 14 (23.33%) from urban area. Most of the patients were farmers 30 (50%), followed by house wives 12 (20%), industrial workers 6 (10%), students 6 (10%), and service holder 6 (10%). 48 (80%) patients came from low socioeconomic condition. [Table-I].

Table-I
Demographic Data

	No. of Patients	Percentage
Age group in years		
10-19	4	6.67
20-29	12	20
30-39	8	13.33
40-49	24	40
50-59	6	10
60-69	6	12
Sex Distribution		
Male	50	83.33
Female	10	16.67
Dwelling Area		
Rural	46	76.67
Urban	14	23.33
Occupation		
Farmer	30	50
Industrial worker	6	10
House wife	12	20
Student	6	10
Service holder	6	10
Socioeconomic status		
Extreme Poor	4	6.67
Relative Poor	44	73.33
Affluent	12	20

All the patients of sinonasal polyposis presented with significant nasal obstruction (100%). Next common symptoms were running nose 90%, headache 80%, sneezing 70%, and nasal itching 40%. 12 (20%) patients with nasal polyposis were positive on skin prick test with airborne allergens. 6(10%) patients were found to be associated with bronchial asthma. Among this patients 18 (30%) patients had history of food allergy, 12(20%) patients had history of inhalation allergy and 2 (3.33%) had drug allergy (Penicillin). [Table-II]

Table-II
Clinical picture of sinonasal polyposis.

	No. of Patients	Percentage
Clinical Presentation		
Nasal Obstruction	60	100
Running Nose	54	90
Sneezing	42	70
Nasal Itching	24	40
Headache	48	80
Skin Prick Test		
Positive	12	20
Negative	48	80
Association with allergic Diseases		
Bronchial Asthma	6	10
Atopic Dermatitis	0	0
Allergic Conjunctivitis	0	0
History of Allergy		
Inhalation Allergy	12	20
Allergy to Food	18	30
Allergy to Drugs	2	3.33
Insect Allergy	0	0

Discussion:

In this study, the age range of sinonasal polyposis was 16-60 years with peak occurrence in 5th decade with a mean of 40 years. It is consistent with other studies, which showed median age of 50 years and highest incidence among 4th and 5th decades.¹⁰

Most of the patients 46 (76.67%) came from rural areas and the rest 14 (33.33%) were urban dwellers. Sex ratio between male to female was approximately 5:1, which is not resembled with the findings others, who showed male to female ratio of 2:1.¹⁰

Regarding occupation, most of our patients were farmers 30 (50.00%) followed by house

wives 12 (20.00%), industrial workers 6 (10.00%), students 6 (10.00%), service holders 6 (10.00%). This reflects the fact that 80% of our population lives on agriculture and majority of patients coming from that group. This study shows the relationship between occurrence of sinonasal polyposis and socioeconomic status of the patients. The relatively poor were affected most 73.33% and affluent class were less. Financial categorization was done on the basis of per capita income in one year according to survey by World Bank.

All the patients of sinonasal polyposis presented with significant nasal obstruction (100%). Next presentations were running nose 90%, headache 80%, sneezing 70%, nasal itching 40%. In this study, only 20% patients had positive skin prick tests. 6 patients (10.00%) were suffering from bronchial asthma which resembles with the findings of other series, who described the association of nasal polyposis with asthma ranging from 7-20%.⁹ According to another study up to a third of nasal polyposis patients have asthma, whereas polyps are only found in 7% of asthmatics.⁸

This study shows the relationships of symptoms of nasal polyposis with different types of allergens. Out of 60 patients 6 (10%) patients described increased severity of symptoms of nasal polyposis with inhalational allergens which is not resembles with the findings of others, who found no association between the presence of allergy per positive skin prick tests and symptom scores.

Conclusion:

Clinically evident respiratory allergies, particularly to perennial airborne allergens, play a relevant role in the pathogenesis of nasal polyposis, probably through the induction of a long-lasting inflammation of the nasal mucosa.

References:

1. Durhorn SR. Mechanisms and treatment of allergic rhinitis, in Scott-Brown's Otolaryngology, 6th ed, vol 4, PP 4/6/1 – 4/6/4.
2. Annesi-Macsano I. Epidemiological evidence of the occurrence of rhinitis and sinusitis in asthmatics. *Allergy* 1999; 54 (Suppl 57): 7 – 13.
3. Kabir ARML et.al 2000, Prevalence of Allergic Diseases in Bangladesh, in *Allergic Rhinitis; A handbook for doctors*, Bangladesh Society of Allergy & Immunology, 2000; PP 9.
4. Mygina N, Dahl R, Bacheft C. Nasal polyposis, eosinophil dominated inflammation, and allergy. *Thorax* 2000; 55: 79 – 86.
5. Asero R, Bottazzi G. Nasal polyposis: a study of its association with airborne allergen hypersensitivity, *Ann allergy Asthma Immunol* 2001; 86(3): 283 – 5.
6. Caplin I, Haynes IJ, Spahn J. Are nasal polyp's allergic phenomenon? *Ann Allergy* 1971; 29: 631 - 634.
7. Bunnag C, Pacharee P, Vipulakong P, et al. A study of allergic factor in nasal polyp's patients. *Ann allergy* 1983; 50: 126 – 132.
8. Settipane GA, Chafee FH. Nasal polyps in asthma and rhinitis, a review of 6037 patients. *J Allergic Clin Immunol* 1975; 59: 17 – 21.
9. Hedman J, Kaprio J, Poussa T, et al. Prevalence of asthma, aspirin intolerance, nasal polyposis and chronic obstructive pulmonary disease in a population based study. *Int J Epidemiol* 1999; 28: 717-722 [abstract].
10. Niels Mygind, Balerie Junddd, *Nasal Polyposis in Scott-Brown's Otolaryngology - Head and Neck Surgery*, 7th edition. Volume 2, Page 1550.