

Prevalence of Allergic Rhinitis in Patients Diagnosed with Chronic Rhinosinusitis in a Tertiary Care Hospital

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ABSTRACT

Background: Chronic rhinosinusitis (CRS) is an inflammatory disorder of the nose and paranasal sinuses lasting for 12 weeks or longer.

Aim: To explore the prevalence of allergic rhinitis and common allergens in chronic rhinosinusitis patients.

Methods: The study was conducted in Department of ENT at Dr. Akbar Niazi Teaching Hospital Islamabad from April 2021 to March 2022. On the basis of inclusion criterion, one hundred patients of CRS included in this study. All patients met the diagnostic criteria for CRS through, history, nasoendoscopic examination, and radiological findings. Allergic rhinitis was diagnosed on the basis of skin prick test (SPT). All patients who were operated for CRS were excluded from the study.

Results: Male and female ratio was almost equal with slight male predominance. The incidence of polypoidal CRS and non-polypoidal CRS was 52 (52%) and 48 (48%) respectively. Almost two third of polypoidal CRS patients suffered from severe disease based on Nasoendoscopic examination and radiological findings (CT-Scan). The commonest presenting symptoms were nasal discharge and nasal blockage effecting around 92% and 91% patients respectively. Skin prick test (SPT) showed 73% patients were suffering from allergic rhinitis with pet dander being the most common allergen.

Conclusion: Chronic Rhinosinusitis is a common disease and majority of patients develop CRS secondary to allergic reaction. Early diagnosis of allergic rhinitis with identification of specific allergens and its management can help in prevention of CRS.

Keywords: Allergic rhinitis (AR), Chronic rhinosinusitis (CRS), Sinunasal Polyposis, non-allergic rhinitis, Skin prick test (SPT)

INTRODUCTION

Allergic Rhinitis (AR), Acute Rhinosinusitis (ARS) and Chronic Rhinosinusitis (CRS) are considered as upper airway diseases which put significant burden on health system globally¹. Allergic Rhinitis (AR) is an IgE mediated allergic reaction of nasal respiratory mucosa to allergen which are present in air both indoor and outdoor. Allergic Rhinitis (AR) is characterized by nasal discharge, sneezing, nasal itching and obstruction^{2,3}. Rhinosinusitis is clinically defined as inflammation of nose and paranasal sinus which is characterized by minimum two or more symptoms which includes rhinorrhea (anterior or posterior), nasal congestion, nasal stuffiness, facial pain and hyposmia combined with diagnostic findings on nasal endoscopy or CT scan as stated by the European position paper on Rhinosinusitis and nasal polyp (EPOS)⁴.

CRS involves estimated 12% of the world population at some stage of age and is believed to be viral, bacterial, fungal and immunologic in origin. Some predisposing factors like Allergic rhinitis, congenital anatomical anomalies of nose and paranasal sinuses (paradoxical turbinate concha bullosa), genetic diseases (cystic fibrosis, immotile cilia syndrome), active or passive smoking, some neoplastic conditions can lead chronic rhinosinusitis⁴. Pathophysiology about the association between acute rhinosinusitis and chronic rhinosinusitis is still debatable and a gold mine for ENT researchers. One widely accepted theory among researchers is that allergic rhinitis causes swelling of sinonasal mucosa which impairs mucociliary function that ultimately obstructs the ostia of the sinuses and results in rhinosinusitis⁵. Another theory claims that patients of allergic rhinitis have significant inflammation of nose and paranasal sinuses during allergen season compared to non-allergen season^{6,7}. Geographically prevalence of allergic rhinitis among the patients of chronic rhinosinusitis vary from 25% to 75% which is way more than non-CRS population.

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MATERIALS AND METHODS

This cross-sectional study was performed in the Department of ENT at Dr. Akbar Niazi Teaching hospital Islamabad after Ethical Review Committee permission, where one hundred patients were included in this study from April 2021 to March 2022. The patients were diagnosed for chronic rhinosinusitis on the basis of history, clinical examination, nasoendoscopy, and radiological findings. The patients who were diagnosed on the basis of aforementioned set of diagnostic requirements were included in this study after informed consent. Patients of diagnosed CRS who were operated for this condition were excluded from the study. Age and gender distribution, presenting complaints, signs of diseases, severity of disease and sensitivity to common allergens were noted. The data was analyzed by SPSS version 22.0.

RESULTS

Male and female ratio was almost equal with slight male predominance (Graph 1). After examination through Nasoendoscopy we found that 54% patients of CRS (n=100) developed polypoidal changes while in 46% no polypoidal changes seen (Table 1). Among 54 patients of polypoidal CRS, 72% were suffering from severe polypoidal changes, 16.6% from moderate and 11% from mild polypoidal changes (Table 2). Most common presenting complaints were nasal discharge (95%) and blockage (94%). Least presenting complaints were decrease sense of smell and facial pressure, 63% each (Table 3)

Table 1: Frequency of Polypoidal and Non polypoidal patients in CRS

Type of CRS	Frequency	%age
Polypoidal changes	52	52%
No polypoidal changes	48	48%

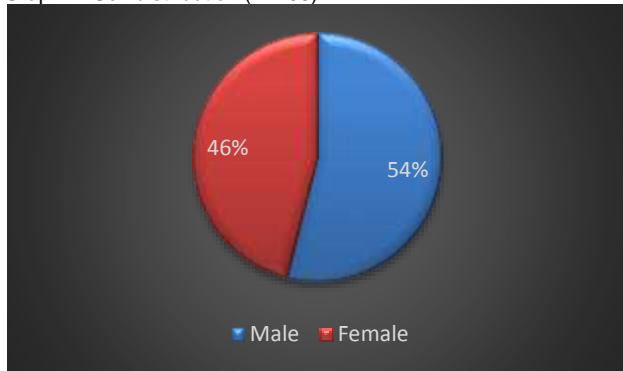
Table 2: Grading of Polypoidal changes in CRS (n=52)

Mild	9	17.3%
Moderate	11	21.1%
Sever	32	61.5%

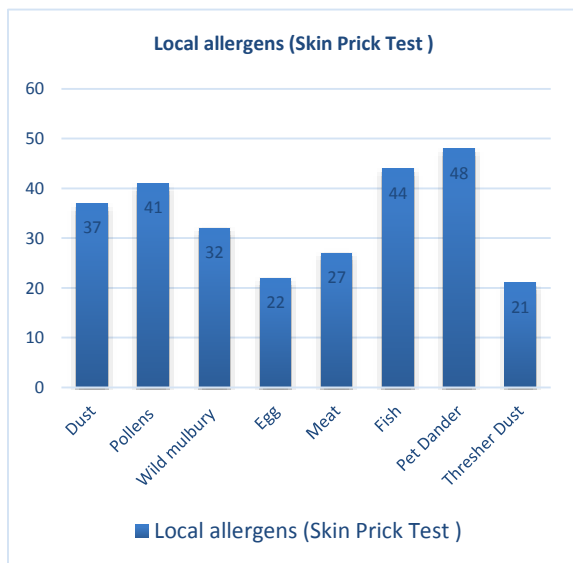
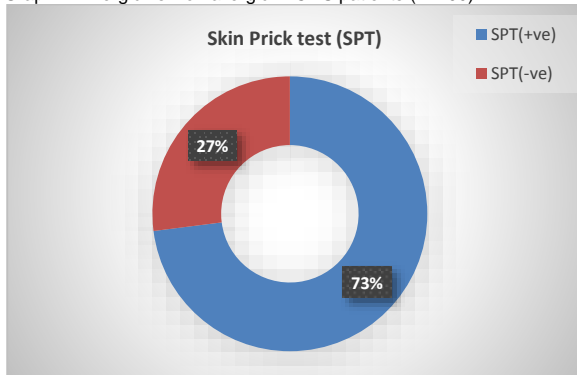
Table 3: Symptoms of CRS patients

Nasal discharge	92%
Nasal obstruction	91%
Headache	84%
Sneezing	73%
Post. Nasal drip	69%
Decreased sense of smell	63%
Facial pressure	63%

Graph 1: Sex distribution (n=100)



Graph 2: Allergic vs Non allergic in CRS patients (n=100)



Graph 3: Skin Prick Test (n=100)

*Each number shows percentage of the patients among hundred patients (n=100)

To determine the frequency of nasal allergy among study group (n=100), Skin prick test (SPT) done and we found that 73% patients were suffering from allergic rhinitis while remaining 27% were suffering from possible nonallergic rhinitis (Graph 2).

SPT results were further analyzed to find the causative local allergens. Among SPT positive patients 73(48%) were sensitive to Pet dander, 44% to fish and 41% to pollens. Wild mulberry which is considered as invasive species in this region was found to be sensitive in one third of the SPT positive patients (Graph 3).

DISCUSSION

Rhinosinusitis is a common health issue which can significantly affect the quality of life of the patients. Symptoms of rhinitis lasting more than 12 weeks are classified as chronic rhinosinusitis (CRS). Sinonasal infections, nasal allergies, congenital anomalies of nose and paranasal sinuses, mucociliary dysfunctions and systemic disorders are the known causes of chronic rhinosinusitis^{7,8}.

Mean age of patients was 36 years in our study in which 52% of cases with chronic rhinosinusitis had nasal polyposis. In a research study by J Staikuniece et al, reported polypoidal changes in 70% of CRS cases⁹. We found 48% patients of CRS are suffering from non-polypoidal disease⁹. Male to Female ratio is almost equal in our study. Cheng Ma et al found in their study that prevalence of allergy in CRS patients was 22.4% with no statistical difference between males and females ratio¹⁰. CRS with or without polypoidal changes is often considered as same disease although chronic rhinosinusitis and sinonasal polyposis are different diseases due to pathophysiological differences in their mechanism and inflammatory mediators¹¹.

In our study we combined sinunasal endoscopy and radiological findings for measurement of nasal patency as objective evaluation of polypoidal disease¹². We found that almost two third of the patients of polypoidal CRS were suffering from severe disease and remaining one third were suffering from moderate and mild disease which is accordance of other studies done on severity and quality of life^{13,14}.

Most common presenting complaints in CRS patients in our study were nasal discharge, nasal blockage and headache. Nasal blockage and headache are main complaints reported by other researchers (15-17). Two third of CRS patients presented with sneezing and post nasal drip while 63% of CRS patient reported with fascial pressure and decreased sense of smell. RL Doty et al found almost same percentage of decreased olfaction¹⁸.

All patients (n=100) were subjected to skin prick test (SPT) and we found that almost 2/3rd (73%) of CRS patients in this current study were suffering from allergic rhinitis being positive for SPT whereas the remaining 27% (n=100) found to be negative for SPT. This finding is in accordance to study done by M Fereidouni et al in Iran(19) . Patients who were SPT negative needed to be evaluated for non-allergic causes of CRS including Yong's syndrome, immotile Cilia syndrome, structure anomalies etc.

The most common local allergen identified from SPT in our study was pet dander involving 48% patients (n=100). Animal dander is big challenge for AR patients worldwide. Bukstein et al found animal dander as main causative agent for allergic rhinitis in a study which support our study findings²⁰. Fish, pollen and dust allergens were positive in 44%, 41% and 37% respectively. These allergens are found to affect the population in this percentage in other researches^{21,22} Thresher dust was least allergic (21%) in our study population (n=100).

CONCLUSION

Chronic Rhinosinusitis is a common disease which can involve general population irrespective of age and gender. Majority patients develop CRS secondary to allergic rhinitis. Early diagnosis of allergic rhinitis and identification of specific allergens can help in life style modifications and prevention of complications caused by CRS. Allergenicity of CRS should be part of early diagnostic tools.

Conflict of interest: Nil

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