La Prensa Medica Argentina

Research Article

The Frequency of Allergic Rhinosinusitis in Patients Referred to Ear, Nose Throat Clinic due to Chronic Rhinosinusitis

Seyed Abdollah M[1], Seyyed Abbas H[2*] and Farshad AA[2]

[1]*Traditional and Complementary Medicine Research Center, Mazandaran university of medical sciences, Sari, Iran*

[2]*Department of Otolaryngology, Head and Neck Surgery, Traditional and Complementary Medicine Research Center, immunogenetic research center, Mazandaran University of medical sciences, Sari, Iran*

[*]**Corresponding author:** Seyyed Abbas Hashemi, Department of Otolaryngology, Head and Neck Surgery, Traditional and Complementary Medicine Research Center, immunogenetic research center, Mazandaran University of medical sciences, Sari, Iran, Tel: +98-9112581083; E-mail: abbas.hashemi30@gmail.com

Rec date: Mar 12, 2015 **Acc date:** Jun 17, 2015 **Pub date:** Jun 23, 2015

Abstract

With respect to importance of chronic rhinosinusitis, especially its allergic type among 150 referent patients to ENT (Ear & Nose & Throat) clinic with taking the history of disease and accurate clinical examination and recording the results of total serum (IgE) and eosinophil of peripheral blood, the patients with allergic and non- allergic cases were identified and the cases in which it was not possible to diagnose accurately by these methods they were reported under title of suspicious to allergic symptom where among these patients, about 45% of them were diagnosed with allergic case. And at the same time, the relationship was explored and determined among asthma, conjunctivitis, and eczema with allergic type of disease in which these types of diseases were seen clearly further in allergic rhinosinusitis than in its non- allergic type.

Similarly, the history for allergy to aspirin and background to tuberculosis disease was observed more in allergic type than in non- allergic type. With respect to gender of patients, it was known that chronic rhino- rhinosinusitis was more prevalent in females and also the probability of allergic type has been greater in females than in males. But, in non- allergic type, the frequency percentage was higher in males than in females; however, the frequency percentage of non- allergic type of disease was greater in males than in females as total. But the chronic rhino-rhinosinusitis was totally the most prevalent type of the given disease whether in females and or in males.

The age distribution of chronic rhino-rhinosinusitis was also investigated in which the patients were younger totally in allergic type than in non- allergic type of disease and also the startup age of disease was lower in patients with allergic type and it was around puberty while in non- allergic cases the given disease started from older ages. Likewise, regarding study on seasonal intensification of disease, the symptoms were often intensified at early spring and autumn among patients with allergic cases. Similarly, with respect to the acquired history from the patients, the frequency rate of various types of rhino-rhinosinusitis symptoms was determined and compared in both allergic and non- allergic types in which the frequency rates were greater in nasal discharge and polyps, itchy nose, frequent sneezing, and nightly coughing in allergic type while the rates of frequency were higher in headache and sense of heaviness on sinuses in allergic type. It was concluded from these investigations that the allergic rhino-rhinosinusitis was more prevalent among the females and there was direct relationship among this disease with asthma, conjunctivitis, and eczema and this illness is intensified during spring and autumn seasons and suffering from tuberculosis and allergy to aspirin are seen further in these patients than the normal people also the patients are younger than other cases while the age of onset of these symptoms is around the puberty and nasal discharge and polyp and itchy nose along with frequent sneezing and nightly coughing are some of prevalent symptoms in this disease.

Keywords: Allergy; Rhinosinusitis; Chronic

Introduction

Rhinosinusitis or inflammation of nose and paranasal sinuses is one of the most epidemic diseases, which can highly effect on life of people. The chronic rhinosinusitisis one of the epidemic diseases, which influences 1/1000 of total people in the community [1-4].

The term 'chronic' is used for the cases in which the symptoms of disease remain for more than 12 weeks. Eosinophils are the inflammatory cells, which often occur in nasal mucus and sinus of the patients with chronic rhinosinusitis and this issue may represent the immunologic and or probably allergic cause for this disease. Due to long-term inflammation in nose, chronic rhinosinusitis may lead to disorder in performance of olfactory epithelium and eventually causes olfactory disorder where sometimes this disorder may be irreversible [2-7].

The patients with chronic rhinosinusitis have also often high level of total serum IgE so this denotes an allergic response. A great number of these patients simultaneously suffer from asthma as well or some symptoms of asthma occur during trend of disease so that a certain relationship is seen among these two diseases in many cases and recently it has been characterized that the allergic rhinosinusitisis one of the risk factors for asthma. The allergic rhino-rhinosinusitis, which is a type of chronic rhino-rhinosinusitis, includes two seasonal and stable types. Often the combined cases may be also observed of course. The pollen from trees, flowers, and spores of fungi, which are suspended on air, are the seasonal allergens and cause creating and intensification of symptoms in seasonal cases. The main symptoms in chronic rhinosinusitis include frequent sneezing, nightly coughing, watery rhinorrhea and nasal polyp, sense of heaviness on sinuses, headache, itchy nose, and in subsequent allergic type the patients may be exposed to these allergens and they will be stable as long as such a contact exists while in seasonal type the symptoms often starts since the early spring and it is continued in summer as well but in stable cases , which are caused by disease of mites, suspended fungi in room air, and dust and haze and hair of dog and cat, the symptom exist at least for 9 months in a year [1,2,7-12].

Despite of the various diagnostic laboratory methods, an accurate history and physical examination is still deemed as the best and most precise technique for diagnosis of allergic -rhinosinusitis.

Nonetheless, given the above-said cases, the main cause is not often identified in exposure of the patient with rhinosinusitis and its allergic cases are often ignored which deemed as the prevalent causes of disease and as a result the improper and pertinacious therapies by various nose sprays may lead to creation of irreversible side effects in nasal mucus and sinuses.

During a prospective investigation in this project that was conducted among 150 patients, who had referred to ENT Clinic in Buali Sina Hospital at Sari City (Mazandaran Province, Iran) because of chronic rhinosinusitis to this center, the rate of frequency of allergic materials was determined in this disease. Similarly, in addition to taking history and conducting clinical examination for any disease in some cases of patients who also suffered from other diseases like asthma, conjunctivitis, and eczema rather than chronic rhino-rhinosinusitis, it was identified the rate of accompaniment of these diseases with allergic and non- allergic types of the given disease with this study and the present and or absence of relationship among these diseases with allergy was determined. At the same time, in this survey the history of tuberculosis and background for allergy to aspirin, which its relationship with allergy has been mentioned in the given essays, were asked from these patients and this relationship, was determined.

With respect to history of patients, the rate of frequency was determined in these patients for each of main symptoms of rhinosinusitis and these frequencies were compared between allergic with non- allergic groups. Likewise, the rate of seasonal intensification of the given symptoms was compared in allergic and non- allergic groups.

Finally, we determined the frequency rate of allergic rhinosinusitis in chronic rhinosinusitis with respect to patient's age, gender, and disease startup age and compared them with non- allergic type.

It is hoped that the conducted efforts and the given results to become effective in making decision for appropriate treatment of the patients with chronic rhino-rhinosinusitis.

Methodology and Method of Project Implementation

In this investigation that was carried out in prospective form among the patients who had referred to ENT Clinic in Buali Sina Hospital at Sari City during October and November 2003 with chronic rhinosinusitis disease including rhinosinusitis symptoms such as nasal discharge, polyp, frequent sneezing, nightly coughing, itchy nose, sense of heaviness on sinuses, and headache which they had experienced for more than 12 weeks, this group was studied. It is obvious that the group of patients, who had experienced these symptoms within shorter period of time, was excluded from this study. The sampling technique is based on research objective and all patients with chronic rhinosinusitis are studied. With respect to the aforesaid essays, the sample size includes 150 participants and the used statistical method is of descriptive type. Given the aforesaid essays, the technique for measurement of total serum IgE and quantity of Eosinophils in peripheral blood can be employed as a screening method. Whereas it is aimed at screening of allergic rhinosinusitis among the patients with chronic rhinosinusitis in this study, the type of rhinosinusitis was also diagnosed in this study by means of 3 criteria including total serum IgE, number Eosinophils in peripheral blood, and history and clinical examination of patient. So, after recording clinical symptoms and history of patients, the results of tests of total serum IgE and number of Eosinophils of peripheral blood were also recorded upon their referral again with respect to clinical symptoms and the history given for diagnosis of chronic rhinosinusitis in them.

It should be noted that the review on rate of total serum IgE and number of Eosinophils in peripheral blood is a classic technique done for diagnosis of reason of disease in patients with chronic rhinosinusitis among them we play the role of recording and conclusion of the acquired data from these patients. The allergic and non- allergic types were identified in chronic rhinosinusitis by means of this information. Of course, type of disease could not be diagnosed in a group of patients by means of these data and in fact this group only had some of symptoms but not all of them and we reported this group under title of suspicious group to allergy.

At the same time, in order to investigate the rate of accompaniment of asthma, conjunctivitis, and eczema with allergic rhinosinusitis in this study a questionnaire was given to the patients in order to ask the patients about symptoms of disease by means of questions about three major symptoms in the case of any disease. Finally, these data were reported in the charts and the frequency percentage was shown in patients with at least one symptom from these diseases as well as the group of patients with all of symptoms of the above-said diseases. It was asked about the seasonal intensification of symptoms of disease from the patients by means of this questionnaire in this survey and this variable was compared in various groups of chronic rhinosinusitis comprising of allergic, non- allergic, and suspicious to allergy types. Similarly, some questions were asked from the patients about history of tuberculosis and allergy to aspirin and various groups were compared.

Regarding implementation of the aforesaid tests and through cooperation with laboratory of Buali Sina Hospital in Sari, we referred the given patients coming in the laboratory of ENT Clinic because of chronic rhinosinusitis that they needed to test of rate of total serum IgE and counting Eosinophils of peripheral blood in order to report the results of the given lab identically with the same criteria and to be comparable and studied. Upon conclusion from the given information, the patients with both Eosinophils of peripheral blood and total serum IgE as well as allergic positive history were reported as allergic and those patients without the above-said symptoms were reported as non-allergic rhino-rhinosinusitis. Likewise, the patients with some of the above symptoms not all of them have been reported as suspicious to allergic rhino-rhinosinusitis. It is clear that one could identify the allergic group from non- allergic group with more accurate facilities and more specialized experiments as well so that it was dispensed with employing such techniques in this investigation.

Finally, the given results were reported as frequency percentage of allergic and non- allergic and suspicious to allergic rhinosinusitis and the results were analyzed and compared with respect to patients' age and age of diseases startup as well as gender, and the accompanied and clinical symptoms.

Reporting of Results

After review of 150 given patients in ENT Clinic of Sari Buali Sina Hospital that had referred to this center for chronic rhinosinusitis and after taking history and recording clinical examination and tests of patients, the following results were acquired:

Among 150 referent patients, 68 were diagnosed with allergic type, 37 with non- allergic type and 45 patients were diagnosed with suspicious cases to allergy. Namely, regardless of age and gender, 45.33% of them were allergic cases, 24.67% with non- allergic, and 30% of patients were suspicious to allergic cases.

Among these patients, 99 had total serum IgE at high level that they constituted 66% of total referents in which this ratio was 65.22% in males and 66.6% in females.

The Eosinophils of peripheral blood was seen in 82 cases that included 54.67% but this ratio was 49.27% in males and 59.26% among females.

The relationship among asthma with allergic rhino-rhinosinusitis

In this part of study, each of patients, who had referred to the center for chronic rhino-rhinosinusitis, was asked about history of presence of the following symptoms: 1) frequent coughing; 2) apnea; and 3) chest rattling (crackles).

These symptoms are in fact triad for asthma disease. Afterwards, data were analyzed in two ways. Firstly, they were analyzed in patients with at least one of asthma symptoms and secondly in patients with all 3 aforesaid symptoms.

These data were drawn as chart that can be seen in section of charts and diagrams.

In this investigation, the percent of patients with at least one of asthma symptoms were 64.71%, 53.33%, and 38.84% among allergic, suspicious-to-allergic, and non- allergic groups respectively and this indicated the direct relationship among allergic rhinosinusitis with occurrence of asthma symptoms. Similarly, this percentage about the patients with all asthma symptoms was 36.76%, 11.11%, and 5.41% for allergic, suspicious-to-allergic, and non-allergic cases respectively where this percentage was again higher among allergic cases.

The relationship among conjunctivitis with allergic rhino-rhinosinusitis

Like the previous section in this part, 3 symptoms of eye- redness, eye discharge, and itchy eye were asked from the patients and the patients with at least one of the above-said symptoms were classified in allergic (85.29%), suspicious-to-allergic (53.33%), and non- allergic (29.73% groups. The percentage of patients with all 3 symptoms was respectively allergic (25%), suspicious-to-allergic (13.33%), and non-allergic (8.11%) groups so this indicated the direct relationship among allergic rhinosinusitis with rising chance of conjunctivitis in patients.

The relationship among eczema with allergic rhino-rhinosinusitis:

Like the former phases, in this stage some questions were asked from these patients about symptoms of eczema. These symptoms included ecdys is, itchy skin, urticaria, and dermal erythema. Similar to the former stages, the patients with at least one of the above symptoms as well as patients with all of three symptoms are reported. The allergic group (66.18%) and suspicious-to-allergic group (44.44%), and non-allergic group (24.32%) had experienced at least one of eczema symptoms. But this ratio about the patients with all of eczema symptoms was seen in allergic (7.35%), suspicious-to-allergic (6.67%), and non-allergic (2.7) groups and these values express the positive role of allergic rhinosinusitis in increasing rate of occurrence of eczema in these patients.

Gender distribution of patients in chronic rhino-rhinosinusitis:

Among 150 patients, who were studied in this survey, 81 were females and 69 males out of them they include 54% of females and 46% of males. But the allergic, suspicious-to-allergic, and non- allergic ratios of patients were different based on gender. Among the male patients, 40.58% were allergic, 33.33% suspicious-to-allergic, and 26.09% non-allergic cases. While this ratio was among females including allergic (49.38%), suspicious-to-allergic (27.16%), and non-allergic cases. Therefore, the ratio of allergic chance for chronic rhinosinusitis was 5:4 between females and males; namely, the females have 25% greater chance than males to suffer from allergic type of chronic rhino-rhinosinusitis.

The relationship between allergic rhinosinusitis and history of tuberculosis

Among 150 patients with chronic rhino-rhinosinusitis, who had referred to ENT Clinic in Buali Hospital, only one patient mentioned the history of tuberculosis that was also included in allergic group. In other words, the percentage of cases with tuberculosis was 1.47% in allergic group and this ratio was zero in other groups.

The relationship between allergic rhinosinusitis with history of allergy to aspirin

8.82% of the patients, who were diagnosed with allergic cases, had history of allergy to aspirin while this ratio was 2.22% in suspicious-to- allergic group. No history of allergy to aspirin was seen in non-allergic group.

Age distribution among the referent patients

The mean age of referent patients for chronic rhinosinusitis to the clinic was about 29. This mean value was 25 years among patients for whom allergy was diagnosed. This age was 28 years in suspicious-to-allergic group and about 38 years among non- allergic group.

The age distribution of patients was drawn in a chart based on allergic, suspicious-to-allergic, and non- allergic groups and this chart is seen in part of diagrams. It is clear that the peak point of this polygon is place at left side in allergic group and in the right side for non- allergic group.

Age distribution of disease onset in the referent patients

The mean age for start point of disease was about 19 years in referent patients for chronic rhino-rhinosinusitis. This mean age was 14 years in allergic group, 19 years in suspicious group to allergy, and 26 years in non-allergic group.

The diagram of startup age distribution among patients is shown in part of charts. It is obvious that the peak point of this chart is placed at left side in allergic group and it is located in right side for non- allergic group and it is placed among these two groups for the suspicious-to-allergic group.

Seasonal distribution of intensification in disease symptoms

At this stage, each of the referent patients for chronic rhinosinusitis was asked that in which season the symptoms of their disease were intensified. The related diagram for seasonal distribution has been drawn in part of diagrams. In allergic group 69.12% of patients are subjected to severe symptoms of disease in spring, 27.94% of them suffer from it in summer, 66.18% of them in autumn season and 64.71% of patients are inflicted by severe symptoms of diseases in winter season. These ratios were 33.33% in suspicious to allergic group in spring, 13.33% in summer, 64.44% in autumn, and 93.33% in winter.

And for non-allergic group these ratios were 16.22% in spring, 10.81% in summer, 48.65% in autumn, and 100% in winter.

The frequency of chronic rhinosinusitis symptoms in referent patients based on disease type

In this step, we calculated the frequency of each of chronic rhinosinusitis symptoms in each of allergic and suspicious-to-allergic groups with respect to the history that was taken from the patients.

The nasal discharge cases were found in patients of allergic group (88.24%), suspicious to allergic group (71.11%), and non-allergic group (67.57%).

The nasal polyp was seen patients of allergic group (82.35%), suspicious to allergic group (80%), and non-allergic group (67.57%).

The nightly coughing was observed in patients from allergic group (48.53%), suspicious to allergic group (24.44%), and allergic group (21.62%).

The patients suffered from frequent sneezing in allergic group (38.24%), suspicious-to-allergic group (17.78), and non- allergic group (13.51%).

There was symptom of itchy nose in allergic group (54.41%), suspicious-to-allergic group (17.78%), and non-allergic group of patients (16.22%).

Among patients with sense of heaviness in their sinuses, there were allergic group (61.76%), suspicious-to-allergic group (64.44%), and non-allergic group (75.68%).

There were cases of headache in allergic group (64.71%), suspicious to allergic group (66.67%), and non-allergic group (81.08%).

Discussion

With respect to the aforementioned data and drawn charts for any part, one can acquire the special results regarding the rate of frequency of allergic rhino-rhinosinusitis, which was the main goal in this study that 45% given rate of prevalence of disease signified the high epidemic rate of disease in the community and with respect to climatic and regional conditions of the studied site, which are very rich in terms of pathogenic allergens, they seem logically and the given statistics from the aforesaid essays were assumed as one of the greatest published statistics and figures.

The frequency rates of total serum IgE and Eosinophil of peripheral blood were also at very high level so it is expected that the major percentage of the suspicious patients to allergy to also included in the allergic group after more accurate diagnostic measures [2].

Regarding conjunctivitis asthma and eczema with allergic rhino-rhinosinusitis, it is seen with respect to the mentioned figures that the rate of occurrence of symptoms of these diseases to be very higher in allergic group than in non-allergic group to some extent while its rate was placed between two figures in suspicious to allergic group of patients and given that suspicious- to- allergic group was a composed group from two previous groups therefore it seems logically that no accurate diagnosis has been so far presented for this case. This indicates that the allergic rhinosinusitisis directly related to increased probability for occurrence of these diseases and can be justified and reviewed for each of 3 cases of diseases with respect to etiology. In fact, occurrence of several types of allergic diseases in a patient with an allergic disease seems to be logic if it is higher than control group i.e. the non- allergic group.

About gender distribution in allergic rhino-rhinosinusitis, the chronic rhinosinusitis was totally more frequent among the females. The give results are consistent with the existing statistics from the previous studies. But, regarding age distribution of patient with respect to this fact that the patient with allergic rhinosinusitis how the symptoms of disease in younger age i.e. around puberty period when the activity of immunity system reaches to its maximum rate during lifetime therefore age of referents should be smaller in comparison to patients with non- allergic type and this issue is also verified in this investigation. Concerning to non-allergic group in which the etiology of diseases is related to structural and infectious reason etc. it is expected the symptoms of diseases, which usually appear after age of puberty and higher ages following to older ages, to be higher in non-allergic group and this issue is seen in the given results. The mean age of disease onset was about 14 years in non-allergic group that is reasonable with respect to previous studies in which the maximum rate of activity for immunity system was determined at 10-15 since as rate of activity increases in immunity system following to peak point of serum IgE [1-4], the probability of allergy is also increased at these ages. About the relationship among allergic rhinosinusitis and history of allergy to aspirin, this issue can be confirmed with respect to the derived results that this type of allergy is also directly related to allergic rhino-rhinosinusitis. But, regarding the relationship among tuberculosis with allergic rhino-rhinosinusitis, although this rate was higher in allergic group in terms of the given data, this preference was not so clear thereby one can rely on them. But the more accurate results can be found with study on greater number of patients and increasing sample size.

Conclusion

Concerning to seasonal distribution of chronic rhinosinusitis in allergic group, these symptoms are intensified usually in spring and autumn coincided with the seasons when rate of allergens is increased in environment and this seems logically in non-allergic group by assuming that the probability of occurrence of respiratory infections is increased further in upper organs during cold seasons of the year so the symptoms of disease are usually intensified during seasons of autumn and winter and this issue can be seen well in the conducted investigations.

About the symptoms of disease, with respect to the aforesaid essays, the frequency of some symptoms including itchy nose, frequent sneezing, and nightly coughing should be greater in allergic type as usual. This issue is also confirmed with respect to the given results. Moreover, the cases of nasal polyp and nasal discharge were also compared among two allergic and non-allergic groups in which this rate was a little higher in allergic group but cases of headache and sense of heaviness in sinuses were more frequent in non-allergic group

so that this seems logically with respect to nature and etiology of each of these two groups.

References

1. Kaliner MA, Lieberman P (2000) Incidenc of allergic, non-allergic and mixed rhinitis in clinical practice. Annual meeting of the American Academy of otolaryngology –Head and Neck surgery Foundation 24-27.
2. Mullarkey MF, Hill JS, Webb DR (1980) Allergic and nonallergic rhinitis: their characterization with attention to the meaning of nasal eosinophilia. J Allergy Clin Immunol 65: 122-126.
3. Strachan DP (1989) Hay fever, hygiene, and household size. BMJ 299: 1259-1260.
4. Settipane RA, Lieberman P (2001) Update on nonallergic rhinitis. Ann Allergy Asthma Immunol 86: 494-507.
5. Pinheiro AD, Facer GW, Kern E (2001) Rhinosinusitis. In: Bailey BJ head & Neck sur. Otolaryngol philadelphia 345-57.
6. Maning SC (1998) Medical management of inf. & inflammatory Dis. In: Cummings CW, Fredrikson JM. Otolaryngol, Head & Neck sur. 1138-1145.
7. Durand M, Joseph M (2001) Infection of the upper Res. Tract. In: Braunwald, Fauci, kasper. Harrison's principals of intenal Medicine Newyork 188-189.
8. Hashemi SA, Abediankenari S, Madani SA, Akbari M (2012) Comparison of salivary IgA, tear IgA and serum IgE in patients suffering from chronic rhinosinusitis. International journal of medical investigation 1: 31-37
9. Stankiewicz JA1, Chow JM (2002) Nasal endoscopy and the definition and diagnosis of chronic rhinosinusitis. Otolaryngol Head Neck Surg 126: 623-627.
10. Benninger MS, Ferguson BJ, Hadley JA, Hamilos DL, Jacobs M, et al. (2003) Adult chronic rhinosinusitis: definitions, diagnosis, epidemiology, and pathophysiology. Otolaryngol Head Neck Surg 129: S1-32.
11. Hamilos DL (2011) Chronic rhinosinusitis: epidemiology and medical management. J Allergy Clin Immunol 128: 693-707.
12. Madani SA, Hashemi SA (2014) Characterization of up-regulated immunoglobulins in patients with chronic rhinosinusitis. J Pak Med Assoc 64: 382-385.