



RETROSPECTIVE HOSPITAL DATA BASED STUDY ON ALLERGIC RHINITIS CASES IN UPPER ASSAM REGION

Dr. Mohan Kumar Mili	Assistant Professor, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.
Shilpi Gupta*	Post-Graduate Trainee, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India. *Corresponding Author
Shankhadhwaj Borah	Post-Graduate Trainee, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.
Milan Kumar	Post-Graduate Trainee, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.
Monikuntal Sarmah	Senior Resident, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.
Jyotirmoy Phookan	Professor & HEAD, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.
Nabajyoti Saikia	Associate Professor, Department of ENT & Head and Neck Surgery, Assam Medical College, Dibrugarh, India.

ABSTRACT

Introduction: Allergic rhinitis (AR) is clinically defined as a symptomatic disorder of the nose induced after allergen exposure by an IgE-mediated inflammation of the nasal mucous membranes. The symptoms include rhinorrhea (anterior or posterior), nasal congestion, nasal itching, and sneezing. In this study, we tried to determine the prevalence of Allergic Rhinitis among the people of North Eastern part of India (Assam) retrospectively. So we did a data based cohort study in a cross sectional pattern of the patients of visited Otorhinolaryngology Department of Assam medical college Dibrugarh, India, from July 2019 to June 2020.

Aims And Objectives: To study about the burden of Allergic rhinitis among the people of Upper Assam Region.

Methods And Materials: A study was done retrospectively based on data of the 420 patients who visited Otorhinolaryngology OPD in Assam Medical College and Hospital, Dibrugarh from July 2019 to June 2020, with symptoms of Allergic Rhinitis. The diagnosis was made on the basis of history and clinical examination.

Discussion: It was found that out of 420 patients, the bulk of patients came to OPD during rainy season of August, autumn months of October and winter months of November. Besides 64% of people were of working age groups of 21-59 years who were exposed to dust, pollens, fungus, house dust mites during seasonal variations.

Conclusion: The burden of allergic rhinitis in upper Assam region is largely underestimated. The cause of consistent symptoms of allergic rhinitis was noncompliance with medications, Lack of ability to comply with the advice of prevention of exposure to allergens, lack of education, lack of definitive diagnosis in peripheral health centre.

KEYWORDS : IgE mediated Type I hypersensitivity, seasonal, perennial, mixed allergic rhinitis, polyps, immunity

INTRODUCTION:

Allergic Rhinitis is an acute IgE mediated Type I hypersensitivity reaction of nasal mucosa in response to antigenic substance (allergen), associated with episodic attacks of sneezing, watery rhinorrhea, and watering of eyes. Various variables associated with its prevalence such as seasonal (rain, winter), and perennial variables like exposure to dust, pollens, fungus, during spring and rainy season, also food allergies and immunity. Another factor is specificity with 3:2 male; female preponderance.[1]

Allergic Rhinitis is the most common respiratory allergic disease across the globe. Its prevalence, in common with other allergic diseases, such as allergic asthma, has increased over the past few decades. In Asia, 10% to 32% of the general population has allergic rhinitis; it is estimated to be 17% to 29% in Europe and 15% in the United States have allergic rhinitis. Allergy to house dust mite is one of the most common causes of allergic disease. One recent study reported a rate of house dust mite sensitization of 89.1% in Korean children and adolescent with allergic rhinitis. For managing house dust mite induced allergic rhinitis both avoidable measures and pharmacological treatment are used [2].

Besides allergic rhinitis is also classified as ARIA i.e. Allergic rhinitis associated with asthma and allergic rhinitis associated with polyp. ARIA is further classified as Intermittent (when symptoms are <4 days per week or < 4 consecutive weeks per year); Persistent (when symptoms associated are > 4 days per week or >= 4 consecutive weeks per year); Mild severe (when person has normal sleep, normal daily activities, normal work and school and no troublesome symptoms);

Moderate severe (one or more items of abnormal sleep; impairment of daily activities, abnormal work and sleep, trouble some symptoms)[3].

Allergic rhinitis can be also caused by nasal polyps, which lead to loss of sense of smell and cause a typical congestion. Pregnancy or hormonal rhinitis is a non-inflammatory type of rhinitis that alters the contents of blood vessels and they become blocked, producing symptoms that are typical of rhinitis. Rhinitis can be also caused by haemophilus influenza, rhinovirus by neutrophilic infiltration leading to sinusitis, infection, flu, or colds. It presents with sinusitis pain and nasal drips. Surprisingly it is more common in developed countries where pollution is lesser than developing countries [4].

This study was conducted to have an idea of prevalence of allergic rhinitis in the people of Upper Assam region.

METHODS AND MATERIALS:

This is a retrospectively study conducted in Otorhinolaryngology Outpatient department of Assam Medical College, Dibrugarh Assam from July 2019 to June 2020. All the cases diagnosed with Allergic rhinitis were included in study group. The diagnosis was made on the basis of history, clinical examination, X-ray paranasal sinus and blood work (absolute eosinophil count > 550 or nasal swab eosinophil count /hpf). Total 420 patients who visited our department in this time frame were included in this study. Demographic details and symptoms at time of presentation were recorded. Follow up was recorded at 2, 6, 12 weeks after starting of pharmacotherapy. Patients received antihistamines, corticosteroids, mast cell stabilizers, anti-cholinergic, leukotriene antagonists based on ARIA latest guidelines. Clinical

remission was assessed based on improvement in symptoms.

Exclusion Criteria:

Asthmatics, worm infestation, nasal polyp, chronic sinusitis. The study has been carried out with institutional ethical clearance. The written and informed consent were taken from all patient for participation in study. The data collected was tabulated in Microsoft Excel Worksheet and computer-based analysis was performed using the Statistical product and service solutions (SPSS) 20.0 software (SPSS, Chicago, Illinois, USA) and Microsoft Excel 2019. The categorical variables were summarized as proportions and percentages.

RESULTS:

Out of 420 (n) patients 252 were males and 168 were females. Male to female ratio was 1.5:1 as shown in Table 1. Maximum cases were noted in age group 21-30 years, males were (30%) and females were (29%). Minimum patients were seen in age group 71-80 years, male was (4%) and females were (2%) as shown in Table 2. 43% cases were Hindu, 28% were Islam, 20% were Sikh and 9% were Christian as shown in Table 3.

Table 1: Sex Wise Distribution Of Cases

Sex	Number of cases
Male	252
Female	168
Total	420

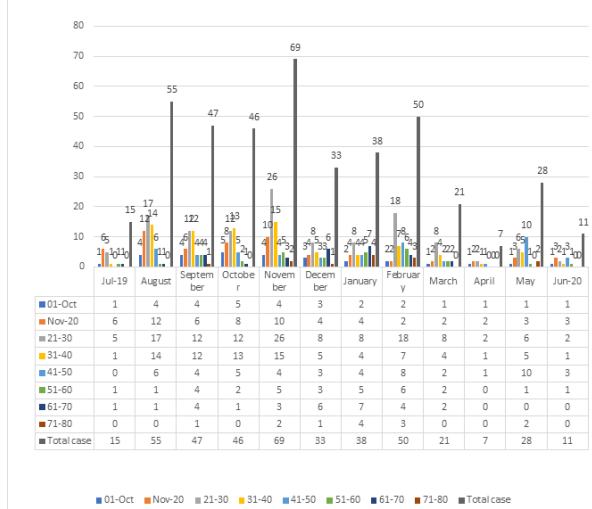
Table 2: Age Wise Distribution Of Cases

Age distribution	Number of males	Percentage	Number of females	Percentage
1-10 yrs	15	6%	14	8%
11-20yrs	34	14%	28	16%
21-30yrs	76	30%	48	29%
31-40yrs	50	20%	32	20%
41-50 yrs	28	11%	22	13%
51-60yrs	21	8%	10	6%
61-70 yrs	19	7%	10	6%
71-80 yrs	9	4%	4	2%
Total cases	252	100%	168	100%

Table 3: Religion Wise Distribution Of Cases

Religion	Number of cases	Percentage
Hindu	180	43%
Muslim	120	28%
Sikh	80	20%
Christian	40	9%

Chart no 1: month wise distribution of cases



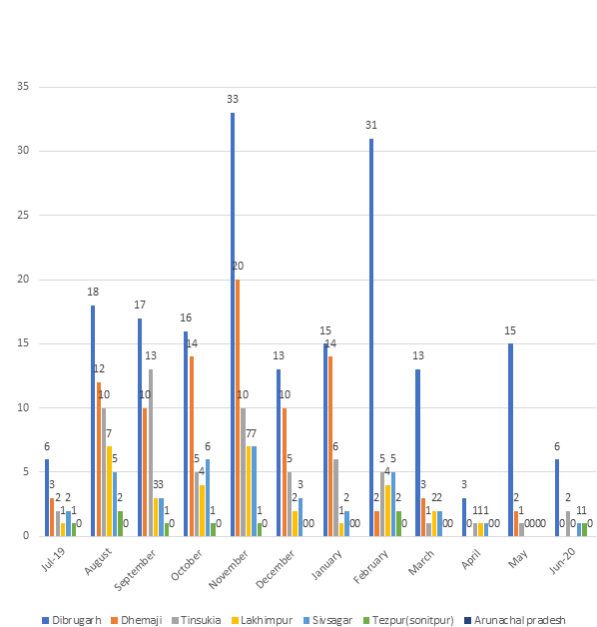
Maximum cases attended our department in month of November (16.4%) and minimum patients in month of April (1.6%). As shown in chart 1. Maximum patient attending our outpatient department came from 44.2% came from Dibrugarh district as shown in Chart 2.

Outcomes of pharmacotherapy:

The cumulative incidence of clinical remission noted at 12 weeks of

follow-up was 62%. However, 30% came back with recurrences after 12 weeks.

Chart 2: District wise distribution of cases



DISCUSSION:

Allergic rhinitis (AR) is clinically defined as a symptomatic disorder of the nose induced after allergen exposure by an IgE-mediated inflammation of the nasal mucous membranes. The symptoms include rhinorrhea (anterior or posterior), nasal congestion, nasal itching, and sneezing. There is no uniform definition for epidemiological studies. Different definitions have been used in questionnaires in previous studies. Allergic rhinitis is a very prevalent disease. In a Dutch study using the GA2LEN questionnaire 29% of the population had allergic rhinitis, based on the question "Do you have any nasal allergies including hay fever?" and 16% Chronic Rhinosinusitis (CRS) based on the EPOS criteria. In this study the risk of CRS was significantly higher in respondents with a doctor's diagnosis of CRS (OR 6.83), AR (OR 2.87), asthma (OR 2.36), an adverse response after taking painkillers (OR 2.34), itchy rash (OR 1.71), or active smoking (OR 1.45)⁵⁻⁸.

Deb A et al in their study mentioned that majority of the AR patients (33.3%) belonged to 30–39 years age group followed by 30.5% in 20–29 years age group. The proportion of females was a bit higher than that of males (57.1% vs. 42.9%). About 56% was from rural areas and rest was from urban population⁹.

In our study we have noted an increased prevalence in males with a ratio of 1.5:1. 90% of males in our study group were farmer by occupation suggesting increased exposure to dust, mites, pollen, grass in the work place predisposes to allergic rhinitis. Maximum cases were noted in age group 21-30 years, males were (30%) and females were (29%). Minimum patients were seen in age group 71-80 years, male were (4%) and females were (2%). This further supports the fact that in this region outdoor allergen are the main cause for development of allergic rhinitis.

All the patients included in our study belonged to similar socioeconomic status and lifestyle. 98% of cases belonged to lower middle class according to Kuppuswamy classification suggesting that in this region due to lack of awareness about hygiene in work place and home there is increased number of cases of allergic rhinitis. 65.3% males in our study group gave history of cigarette smoking which could be another predisposing factor in this region. Bauchau V et al in their study mentioned that self-awareness of allergic rhinitis was reported by 19% of the subjects. Physician-based diagnosis of allergic rhinitis was reported by 13% of the subjects. In step two, 725 clinical assessments were conducted between May and August 2001. A total of 411 of patients, who underwent step two, had investigator-confirmed allergic rhinitis. Among patients with investigator-confirmed allergic rhinitis, 45% had not reported a previous diagnosis by a physician. Prevalence of subjects with clinically confirmable allergic rhinitis

estimated by combining step one and step two data ranged from 17% in Italy to 29% in Belgium with an overall value of 23%.⁸ In our study we found the similar results, 20% of patients attending our Outpatient department came with complaints of irritation and dryness in throat, later on elaboration of history and clinical examination they were diagnosed having Allergic rhinitis. Patients received antihistamines, corticosteroids, mast cell stabilizers, anti-cholinergic, leukotriene antagonists based on ARIA latest guidelines. Clinical remission was assessed based on improvement in symptoms on follow-up of 30% of cases were not able to comply by preventive measures to control allergen. The cumulative incidence of clinical remission noted at 12 weeks of follow-up was 62%. However, 30% came back with recurrences after 12 weeks. While those 8% who were associated with nasal polyps had to undergo polypectomy.

Skoner DP et al in their study mentioned that the allergic response occurs in two phases, which are considered the “early” and “late” phase responses. Early phase response occurs within minutes of exposure to the allergen and tends to produce sneezing, itching, and clear rhinorrhea; late phase response occurs 4 to 8 hours after allergen exposure and is characterized by congestion, fatigue, malaise, irritability, and possibly neurocognitive deficits.¹⁰

The symptoms of allergic rhinitis are not limited to the physical effects on the nose and eyes but also involve adverse consequences to quality of life, including psychological well-being and the ability to learn and process cognitive input. One of the most common complaints related to AR is sleep disturbance, dry throat, bad taste due to long-term medication, the consequences of which are more far-reaching than often is recognized.

CONCLUSION:

The burden of allergic rhinitis in upper Assam region is largely underestimated. The cause of consistent symptoms of allergic rhinitis was noncompliance with medications, Lack of ability to comply with the advice of prevention of exposure to allergens, lack of health education, lack of definitive diagnosis in peripheral health centre, lack of proper guidance, lack of awareness among the common population about the long-term symptoms of allergic rhinitis and their eventual effect on society and development of this region. There is a need to educate common population about preventive measures, early diagnosis and proper treatment for this particular disease.

REFERENCES:

1. Hazarika P, Nayak DR, Balakrishna R. The text book of Ear, Nose, Throat and Head and Neck surgery. 4th ed. Darya Ganj, New Delhi. Satish Kumar Jain for CBS Publishers & Distributors.2019. p. 249-250.
2. Lee JH, Kim SC, Choi H, Jung CG, Ban GY, Shin YS, Nahm DH, Park HS, Ye YM. A Retrospective Study of Clinical Response Predictors in Subcutaneous Allergen Immunotherapy With House Dust Mites for Allergic Rhinitis. *Allergy Asthma Immunol Res.* 2018 Jan;10(1):18-24. doi: 10.4168/aaair.2018.10.1.18. PMID: 29178674; PMCID: PMC5705479.
3. Gleeson M, Clarke R. Scott-Brown's Otorhinolaryngology Head and Neck Surgery. 7th ed. 3 volume set. CRC Press; 2008 Apr 25. P. 1000
4. Bansal M. Essentials of ear, nose & throat. 1st ed. JP Medical Ltd. 2016 Feb 20. P. 222
5. Leth-Møller, KB, Skaaby, T, Linneberg, A. Allergic rhinitis and allergic sensitisation are still increasing among Danish adults. *Allergy.* 2019; 75: 660– 668. <https://doi.org/10.1111/all.14046>
6. Wang XY, Ma TT, Wang XY, et al. Prevalence of pollen-induced allergic rhinitis with high pollen exposure in grasslands of northern China. *Allergy.* 2018;73(6):1232-1243. doi:10.1111/all.13388
7. Wang XD, Zheng M, Lou HF, et al. An increased prevalence of self-reported allergic rhinitis in major Chinese cities from 2005 to 2011. *Allergy.* 2016;71(8):1170-1180. doi:10.1111/all.12874
8. Bauchau V, Durham SR. Prevalence and rate of diagnosis of allergic rhinitis in Europe. *Eur Respir J.* 2004 Nov;24(5):758-64. doi: 10.1183/09031936.04.00013904. PMID: 15516669.
9. Deb A, Mukherjee S, Saha BK, et al. Profile of Patients with Allergic Rhinitis (AR): A Clinic Based Cross-Sectional Study from Kolkata, India. *J Clin Diagn Res.* 2014;8(1):67-70. doi:10.7860/JCDR/2014/6812.3958
10. Skoner DP. Allergic rhinitis: definition, epidemiology, pathophysiology, detection, and diagnosis. *J Allergy Clin Immunol.* 2001 Jul;108(1 Suppl):S2-8. doi: 10.1067/mai.2001.115569. PMID: 11449200.