Study on prevalence of allergic rhinitis in a sample population from Eastern India using the score for allergic rhinitis (SFAR) technique

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ABSTRACT

Allergic rhinitis (AR) is a very common ailment all over the world and it is a cause of significant morbidity. Studies from various Asia-Pacific countries have shown rising prevalence of AR, especially in the school age population. However, studies concerning prevalence of AR in India are very scanty in number. We undertook this pilot study in Eastern India to find the prevalence of AR. We selected adult subjects coming to the medicine outdoors of a tertiary care medical college of Eastern India. After excluding patients with nasal pathology like deviated septum, we administered the Score for allergic rhinitis (SFAR) to the study subjects. Those with scores ≥ 7 were considered to have AR. Then the data from subjects with AR was compared to those without AR.

We had a total of 100 study subjects. 28 among them were found to have AR by SFAR criteria. 57% (n=16) of the subjects with AR were female. 53.5% (n=15) of the subjects with AR were in the 1530 year age group. There was no significant difference in type of housing or mode of cooking at home between AR and non-AR subjects. This pilot study shows the considerably high prevalence of AR in eastern India. However, more studies are needed to actually depict the co-morbid factors and allergens.

INTRODUCTION

Allergic rhinitis (AR) is a very common health problem all over the world [1]. The disease is frequently underdiagnosed and inadequately treated [2]. It is characterized by various symptoms including sneezing, rhinorrhoea and/or nasal congestion. Various external allergens including pollen grains and dust have been implicated in triggering AR; however, in many cases, the exact inciting factor remains unknown [2]. Thus, AR can be seasonal or perennial. Diagnosis of the condition is still debatable and there are examples of both over-treatment and lack of treatment. Children are especially affected by AR with significant losses of school days and academic deterioration.

AR is responsible for massive losses in productivity in a population and also imparts a great economic burden [3]. Thus, it is important to diagnose the condition early and treat accordingly. However, there is still lack of awareness among many physicians regarding the potential morbidity of this common disease and the condition is often trivialized. A recent study clearly depicted the economic burden of AR in a Western population [4].

The prevalence of AR, its associated factors and burden on the society is largely unknown in India. One Indian study showed the prevalence to be more than 10% in the general population; however among asthmatic subjects, the prevalence rises to almost 80% [5]. Thus, the diagnosis and treatment of AR must be given priority in different health programs in India. Allergic disease, once thought to be a predominantly western malady, is now found to be widely prevalent in Asia-Pacific countries [6].

We undertook this pilot study in a tertiary care hospital of Eastern India to find the prevalence of AR in a sample population. Since there is no data on this topic from this part of India, we wanted to find out the prevalence data before starting studies on association and treatment of AR.

MATERIALS AND METHODS

This was a hospital based cross sectional observational study conducted in the medicine outdoor of a tertiary care medical college of Eastern India between 1st November 2013 and 28th

February 2014. Relatives and friends coming with patients to the outdoor were selected as study subjects and explained about the study. All the study subjects were from urban areas. Those who consented to the study were then taken to the ENT outdoor and screened for any nasal pathology. Anyone with polyps, atrophic rhinitis, history of nasal surgery or deviated nasal septum were excluded. Also, anyone receiving steroids or other immunosuppressive drugs, or anyone with respiratory tract infection in previous three months was excluded. All subjects were made to sign an informed consent form before the study. Then, the questionnaire was read out to the subject in his/her own language and the responses were marked on the sheet by the investigator. If the subjects were conversant in English, the study proforma was given to them and they themselves marked the responses. No subject was influenced in any way during responding to the questions. All patients were questioned by the same investigator to avoid inter observer variations. The score for allergic rhinitis (SFAR) questionnaire (table 1) was included in our study protocol.The SFAR is a well-validated questionnaire based tool to diagnose AR in a population [7]. This does not require any laboratory tests. After the questionnaire was completed, the SFAR score was calculated and recorded. Patients with SFAR≥ 7 were labelled as allergic rhinitis and grouped separately for statistical calculation. The data was entered in Microsoft Excel worksheet before calculation. Continuous data is here expressed as mean± S.D. and discreet data is presented as number/percentage. Chi square test was used to calculate significance of 2×2 tables. For continuous data, students' T test was used. P value<0.05 was considered significant.

The study was approved by ethical committee of the institution.

RESULTS

We had a total of 100 patients in our study. Initially 144 patients were selected for study but some did not consent to sharing the information and the information obtained from some others was incomplete. In our study population, the average age was 35.5±13.3 years. The male: female ratio was 52:48. A total of 28 patients had SFAR score ≥7 and were diagnosed as allergic rhinitis (AR) according to the study criteria. Thus, the prevalence of AR was 28%. The average age of patients with AR was 31.8± 9.7 years and the male: female ratio was 12:16 (table 2). Among the patients with AR, 15 (53.5%) were in the age group 1530 years. Among the patients with AR, 57% were female, in contrast to 44% females in the non-AR group. However, the difference was not statistically significant (p=0.27, two tailed Chi-square test). Among the patients with AR, 9 (32%) lived in thatched or mud houses. In contrast, 29 (40%) patients of the non-AR group lived in such types of houses. There was no statistical difference in the household cooking medium (LPG gas vs. other biomass fuels like coal) in the two groups (table 2).

The prevalence of AR was more in the higher socio-economic group. Figure 1 shows the occupation of subjects with AR. Out of 14 farmers in the study population, only 4 (28%) had AR and out of 14 manual labourers, none had AR as per this criteria.

DISCUSSION

Allergic rhinitis is now considered a significant cause of morbidity in any population. School going children and adolescents are particularly affected by this disease and it may also lead to change of occupation and residence. Moreover, this can be a harbinger of future bronchial asthma. The prevalence of AR has been steadily rising in India and other countries. The following table shows the prevalence of AR as reported in different studies:

It is seen that prevalence of AR in Asia-Pacific countries like japan and Taiwan is quite high. In fact, the prevalence in these

Table 1. The SFAR scoring system

Item	Score
Blocked nose, runny nose, sneezing in the past year	1 for each symptom
Months of the year	1 for perennial 1 for pollen season
Nasal symptoms+itchy eyes	2
Triggers	
• Pollens, house dust mites, dust	2
• Epithelia (cats, dogs)	1
Perceived allergic status	2
Previous positive allergic test	2
Previous medical diagnosis of allergy	1
Family history of allergy	2

Table 2. Table showing the comparison of two groups of patients

Parameter	Patients with AR	Patients without AR	P value
Age (in years)	31.8±9.8	37±14.3	0.07
Gender ratio M:F	12:16	40:32	0.27
Residence (concrete: mud or straw)	19:9	43:29	0.49
Cooking (gas: others)	17:11	33:39	0.26
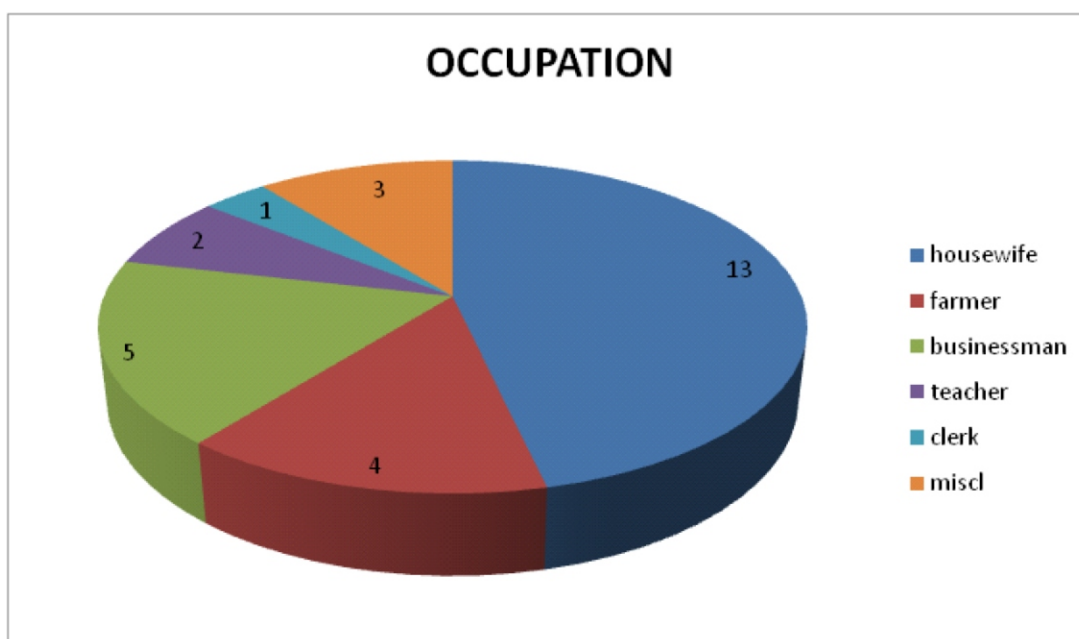
Fig 1. Occupation of subjects with allergic rhinitis (n=28)

Table 3. Showing data from allergic rhinitis studies

Serial number	Author, date	Country	Prevalence of AR
1.	Gaur, 2006 [5]	India	10—13%
2.	Nathan, 2008 [8]	USA	11.2—30 %
3.	Sakurai, 1998 [9]	Japan	25%
4.	AIHW,2008 [10]	Australia	15%
5.	Hwang, 2010 [11]	Taiwan	26.3%
6.	Pawankar, 2012 [12]	Thailand	50.6%
7. **	Present study	India	28%

parts of the world is increasing. The prevalence of AR in japan and Thailand increased from 3.8 to 32% and 38 to 50% respectively over the last two decades [12]. All other countries of this region like Bangladesh, Pakistan and Vietnam have reported increase in AR rates, especially among the school-age population [12]. Concomitantly, there is also increase in other related conditions like eczema and bronchial asthma [12]. Our study, including mainly urban subjects, found a prevalence of 28%. A similar study, done from Delhi in 2008, found an AR prevalence of 21% [13]. However, that study was done only with school girls, while our study included general adult population.

The SFAR is a well-validated score for diagnosing AR. It has been used in many studies and has been proved to have good sensitivity [14]. Using the SFAR score, a Turkish study found the prevalence of AR to be 29.6% [14]. Some other scoring systems are also available like: CARAT, ARCT and RCAT. However, these are mainly used for assessing severity and degree of control of AR. There are no published data on the use of SFAR in India till now. A study from Nigeria found good correlation between SFAR score and nasal smear eosinophil count [15]. Such studies are also needed in India to better validate this scoring system in our population. SFAR is well suited for India when we want to survey a large population, especially in areas where laboratory facilities are not available. After diagnosis of AR, further tests can be done to ascertain the cause of allergy. Another advantage of SFAR is that it considers past history also while tests like CARAT and ARCT only considers symptoms over last 24 weeks. Thus, intermittent AR may be missed in these questionnaires.

Our study is limited by the small number of patients and exclusion of children from the study. Since this was done in general medicine outdoors, we mainly got adult patients. Also, the diagnosis was based on only questionnaire. No laboratory tests like IgE level or allergen challenge test was done. Still, this pilot study shows the high prevalence of AR in Eastern India. Further bigger multi-centre studies are needed to ascertain the association of AR with age, gender, environmental factors and genetic factors in this population.

CONCLUSION

The prevalence of AR is quite high in Eastern India. SFAR technique is quite useful in population surveys in our population. Further bigger multi-centre studies are needed to ascertain the association of AR with age, gender, environmental factors and genetic factors in this population.

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