

Factor Associated with Atopic Dermatitis and Allergic Rhinitis in Patients Attending in Tertiary Care Center Pauri, Uttarakhand, India: A Hospital Based Retrospective Study.

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Conflict of interest: Nil

Abstract

Objectives: This present study was to evaluate the various factors associated with atopic dermatitis and allergic rhinitis in patients attending in tertiary care center, Pauri, Uttarakhand, India.

Methods: Random sampling methods was used for data collection. We adopted a questionnaire from the Korean version of the International Study of Asthma and Allergies in Childhood (ISAAC) Standard Questionnaire for children, and we developed a self-developed questionnaire for adults. We interviewed the patients about the general items such as age, gender, and type of residence, and details of allergic diseases such as allergic rhinitis, atopic dermatitis, and details of other factors likely to be associated with allergic diseases.

Results: A total of 200 cases were enrolled in this study. Among them, 75(37.5%) patients were of atopic dermatitis and 125(62.5%) cases were of allergic rhinitis. 108(54%) most of the patients were males. 128(64%) patients were in <18 years of age, and 72(36%) belonged in ≥18 years of age. 108(54%) cases were living in normal house and 92(46%) were living in apartment. 115(57.5%) patients had family history of allergy.

Conclusions: This present study concluded that allergic rhinitis was more as compared to atopic dermatitis in Garhwal region of Uttarakhand, India. Atopic dermatitis was commonly seen in female gender as compared to allergic rhinitis. Most common associated factor of atopic dermatitis was age <18 years, normal housing, family history of allergy and low socio-economic status. While, most common associated factor of allergic rhinitis was age ≥18 years, apartment, family history of allergy and high socio-economic status.

Key words: Atopic dermatitis, Allergic rhinitis, age group, Socio-economic status

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Introduction

Allergic diseases are considered to arise through complex interactions between genetic susceptibility and environmental exposures [1], so that temporal trends in prevalence are most likely to be explained by changes in environmental exposure, lifestyle, and living conditions [2]. Among such changes considered to contribute to trends in allergic disease prevalence are climate [3], urbanization [4], air pollution [5], cigarette smoke exposure, breastfeeding, and other behavioral and lifestyles factors [2].

Atopic dermatitis and allergic rhinitis are diseases that typically develop in childhood and should not be regarded as minor disorders but rather as chronic diseases that cause very unpleasant symptoms and affect the quality of life of the patients and their families. In addition, these illnesses generate important costs both directly (consumption of health care resources and drugs) and indirectly (reduction in parent work yield) [6]. Epidemiological studies have revealed important differences in the prevalence of allergic disorders among different countries, and even within single countries, as well as contradictory results in relation to the possible associated risk or protective factors [6].

The study revealed that over 20% of children are affected by AD in some countries, but that the prevalence varies greatly throughout the world. For the age group 6–7 years, data showed that the prevalence of AD ranged from 0.9% in India to 22.5% in Ecuador, with new data showing high values in Asia and Latin America. For the age group 13–14 years, data showed prevalence values ranging from 0.2% in China to 24.6% in Columbia. A prevalence over 15% was found in 4 of 9 regions studied including Africa, Latin America, Europe (1 center in Finland) and Oceania [7].

The ISAAC (International Study of Asthma and Allergies in Childhood) was created in 1991 with the aim of establishing and comparing the prevalence of allergic disorders in childhood and adolescence in different countries, and to explore their trend over time, thanks to the adoption of standardized methodology. For this purpose, the study used a questionnaire comprising simple questions in an attempt to homogenize the diagnostic criteria in the different parts of the world, thereby preventing the reported differences in prevalence from being attributable to methodological differences. Up until that time there were few multinational epidemiological studies on pediatric allergic diseases, and most were referred to asthma. This study was focused on atopic dermatitis and rhinitis [6]. Objectives of this present study was to evaluate the factors associated with atopic dermatitis and allergic rhinitis in patients attending in tertiary care center Pauri, Uttarakhand, India.

Materials & methods

This present study was conducted in Department of Dermatology with the collaboration of Department of ENT in VCSGGIMS & R Srinagar, Pauri, Uttarakhand, India during a period from January 2020 to December 2020. Entire subjects signed an informed consent approved by institutional ethical committee of VCSG GIMS & R was sought.

Methods:

Random sampling methods was used for data collection. We adapted a questionnaire from the Korean version of the International Study of Asthma and Allergies in Childhood (ISAAC) Standard Questionnaire for children, and we designed a self-developed questionnaire for adults. We also adopted information for a questionnaire for adults based on a

previously published paper from a South Korean study that made use of questions similar to the ISAAC Standard Questionnaires [18]. We were interviewed the patients about the general items such as age, gender, and type of residence, and details of allergic diseases such as allergic rhinitis, atopic dermatitis, and details of other factors likely to be associated with allergic diseases [19]. Questionnaires were administered by pertained interviewers. A total of 200 patients of atopic dermatitis and allergic rhinitis who attended in OPD of Dermatology and ENT were selected for this study.

Statistical analysis

Data was analysed by the use of simple statistical methods with the help of MS-Office software. All data was tabulated and percentages were calculated.

Observations

A total of 200 cases were enrolled in this study. Among them, 75(37.5%) patients were of atopic dermatitis and 125(62.5%) cases were of allergic rhinitis. Out of 200 patients, 108(54%) most of the patients were males. 128(64%) patients belonged in <18 years of age. And 72(36%) were belonged to ≥ 18 years of age. 108(54%) cases were lived in normal house and 92(46%) were living in apartment. 115(57.5%) patients had family history of allergy.

Table.1. Factors associated with atopic dermatitis and allergic rhinitis.

Variables	Total (N=200)	Atopic dermatitis (N=75)	Allergic rhinitis (N=125)	Total (N=200)
Gender	Male	36(48%)	72(57.6%)	108(54%)
	Female	39(52%)	53(42.4%)	92(46%)
Age group	<18 years	42(56%)	86(68.8%)	128(64%)
	≥ 18 years	33(44%)	39(31.2%)	72(36%)
Housing type	Housing	54(72%)	84(67.2%)	108(54%)
	Apartment	21(28%)	41(32.8%)	92(46%)
Family history of allergy	Yes	39(52%)	76(60.8%)	115(57.5%)
	No	36(48%)	49(39.2%)	85(42.5%)
Socioeconomical status	Low	31(41.33%)	28(22.4%)	59(29.5%)
	Middle	27(36%)	30(24%)	57(28.5%)
	High	17(22.67%)	67(53.6%)	84(42%)

Out of 75 atopic dermatitis cases, 39(52%) patients were atopic dermatitis, 42(56%) cases were in age <18 years, 54(72%) patients were living in normal housing and 39(52%) cases, family history of allergy and 31(41.33%) belonged from low socioeconomic status.

Out of 125 cases of allergic rhinitis, 72(57.6%) cases were males, 86(68.8%) cases were in age <18 years, 84(67.2%) patients were living in normal housing and 115(57.5%) patients had family history of

allergy and 84(42%) belonged from high socioeconomic status.

Discussions

Allergic diseases represent growing health and economic burdens worldwide [8], and have frequently been reported to impair quality of life and retard cognitive functions [9]. About 40% of the global population suffer from an allergic disorder, and of the many allergic diseases known, the most common are atopic dermatitis (AD),

allergic rhinitis (AR), and asthma [10]. The common clinical features of AR include profuse watery rhinorrhea, sneezing, itchy nose, and congestion with occasional experiences of itchy conjunctiva, ears, and throat [11]. On the other hand, AD is a chronic relapsing inflammatory skin disease accompanied by respiratory allergy, recurrent bacterial (impetigo), fungal (tinea), and viral (Herpes Simplex molluscum contagiosum) skin infections [12]. Interestingly, a recent systematic review indicated that patients with AD have increased risks of cardiovascular diseases, certain malignancies, autoimmune diseases, and neuropsychiatric diseases [13]. Furthermore, the coexistence of asthma, allergic rhinitis, and eczema gives rise to more severe and intense symptoms which may lead to a poor quality of life [14].

In this present study, out of 200 cases of allergy, 75(37.5%) patients had atopic dermatitis and 125(62.5%) patients had allergic rhinitis. Most of common factors associated with atopic dermatitis were 42(56%) age of <18 years, 54(72%) normal housing and 39(52%) family history of allergy. 31(41.33%) most of the cases of atopic dermatitis were belonged from low socio-economic status.

Two previous nationwide studies conducted in South Korea reported AR prevalence of 27% and 17.2 % [15,16]. In one of these previous nationwide studies, 31.2% of the study population suffered from AD [15], which is more than twice that encountered in the present study. This may have been because Pohang-Si is an industrial city and industrial pollutants might have influenced such rising prevalence. However, the prevalence of AR and AD found in the present study is in line with that observed in a nationwide Korean study. In fact, several studies conducted in developed countries have shown a higher prevalence of allergic diseases [14,18], and in another, urban areas were found to be

more prone to allergic diseases [18], which supports the argument that industrialization is associated with the higher prevalence of allergic diseases. Views differ regarding whether age is a risk factor of allergic diseases [19]. One study [20] demonstrated a weak relation between age and allergic diseases, whereas another study [21] found a positive association. In the present study, those aged ≥ 18 had higher odds for AD and AR, possibly because our subjects were more exposed to allergens because this population may be more ambulatory, socio-economically active and might encounter more chances of being exposed to allergens during work and travel compared to the lower age group population.

In this present study, most common associated factors of allergic rhinitis were 86(68.8%) of age <18 years, 84(67.2%) lived in normal housing and 115(57.5%) family history of allergy. 72(57.6%) Male gender was greatly associated with allergic rhinitis. Most cases 84(42%) of allergic rhinitis were belonged from high socioeconomic status.

A number of studies have demonstrated an association between family history of allergic disease and the occurrence of atopic diseases in offspring [22,23]. Genetic contributions to allergic disease were estimated to be greater than 50% in two studies, with a range of 36–79% genetically inherited [24,25]. Genetic susceptibility for allergic diseases has been well reported, suggesting the common and distinct genetic loci associated with these diseases [26]. We found that male gender was significantly associated with AR, which is consistent with the results of other studies [17,18], but contrary to the findings of Gough et al. [14]. However, in addition to exposure to the environmental allergens, sex-specific genetic effects might also have contributed to the gender differences in the occurrence of allergic diseases because there are underlying differences in the

inflammatory pathways to different allergens between women and men [27,28].

Conclusions

This present study concluded that allergic rhinitis was more as compared to atopic dermatitis in Garhwal region of Uttarakhand, India. Atopic dermatitis was commonly seen in female gender as compared to allergic rhinitis. Most common associated factor of atopic dermatitis was age <18 years, normal housing, family history of allergy and low socio-economic status. While, most common associated factor of allergic rhinitis was age \geq 18 years, apartment, family history of allergy and high socio-economic status.

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