

Occurrence of Respiratory Atopy in Atopic Dermatitis

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Background : Respiratory atopy (RA) is frequently associated with atopic dermatitis (AD) and the age of onset is usually later than that of the dermatitis.

Objective : The aim of this study was to investigate the prevalence, the onset, and the duration of RA associated with AD in Korea. We also tried to correlate the existence of RA with the severity and prognosis of AD.

Methods : One hundred and eighty one patients with AD were studied. Information about the age at onset and the duration of RA were obtained from the medical history of patients or from the medical records. The severity of AD was graded.

Results : RA was found in 66 cases of AD (36.5%). The average age at onset of asthma was 6 years and the average duration of asthma was 6 years. The average age at onset of allergic rhinitis (AR) was 12.4 years and the average duration of AR was 6.8 years. The prevalence of asthma with AD was the most common in the age group between 8 and 11 years while the prevalence of AR was the most common in the age group between 20 and 23 years. The higher occurrence of RA in the older age group was considered to represent persistence of AD into adult life. We could not find any difference in the severity of AD between pure AD patients and AD patients with RA.

Conclusion : The prevalence of RA in AD in Korea was considered to be similar to that of other reports. The average onset of asthma in Korea was a little later, whereas the average onset of AR was a little earlier than that in the other reports. The duration of RA, which has hardly been mentioned in the literature, was considered to be about 6 years in Korea. It is likely that RA is a poor prognostic factor for AD, but does not affect severity of dermatitis.

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Key Words : Respiratory atopy, Atopic dermatitis

INTRODUCTION

Bronchial asthma and allergic rhinitis called "respiratory atopy" are frequently associated with atopic dermatitis (AD)^{1,2}. It was reported that 30-50% of cases of infantile AD subsequently develop respiratory atopy (RA)^{1,3}.

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AD may be divided into a form associated with RA and another "pure" form which shows neither personal nor family history of RA. AD with RA showed significantly higher levels of serum IgE or eosinophilia and was considered to be associated with a worse prognosis than pure AD^{4,9}.

Approximately 80% of pediatric AD cases develop by 1 year, and 95% of all cases are apparent by 5 years of age⁵. RA usually appears later in the natural history of atopic subjects^{2,10}. Asthma was reported to begin before the age of 5 years in about 60% of cases and allergic rhinitis (AR) to have its onset mostly after 14 years². In another report the mean age of onset of asthma was mentioned as being 3.6 years¹⁰.

The aim of this study was to investigate the

Fig. 1. Distribution of atopic dermatitis patients according to their age(181 cases; 100 males and 81 females)

Fig. 2. Distribution of respiratory atopy according to the age of patients with atopic dermatitis. 181 new outpatients(100 males and 81 females) were studied. 40(22.1%) patients showed asthma and 36(19.9%) showed allergic rhinitis.

Fig. 3. Onset of asthma in 37 patients and onset of allergic rhinitis(AR) in 33 patients with atopic dermatitis; A. the average age at onset of asthma was 6 years. B. the average age at onset of AR was 12.4 years.

prevalence, the onset, and the duration of RA associated with AD in Korea. We also tried to correlate the existence of RA with the severity and prognosis of AD.

PATIENTS AND METHODS

One hundred and eighty one new outpatients with AD visiting the Department of Dermatology of Seoul National University Hospital (SNUH) for the previous 6 months were studied; 100 males and 81 females (Fig. 1). The age of the patients ranged from 5 months to 36 years old. Diagnosis of AD was made according to the criteria of Hanifin & Rajka¹¹. All patients presented with a typical clinical picture of AD and the degree of morbidity varied from slight to severe.

Diagnosis of asthma and allergic rhinitis was

based on the typical clinical symptoms of the diseases which were present at the time of visit or recalled by the patients themselves or by parents of the young patients, or on the medical records of allergy clinics of Pediatrics and Internal Medicine of SNUH. The clinical symptoms of asthma were a cough, wheezing and dyspnea, in any combination. Patients in whom a cough was the only symptom or no medical records for the symptoms of asthma were found at the time of study were not considered to be asthmatic. Major symptoms of AR were sneezing, rhinorrhea and nasal congestion, in any combination. Patients in whom nasal congestion was the only symptom or no medical records for the symptoms of AR were found at the time of study were not considered to have AR. Information about the age at onset and the duration of RA were obtained both from the medical history recalled by patients themselves and/or parents of young patients and from the medical records of SNUH.

Severity of AD in our patients was graded by using a modified scoring system¹² to see if there was a correlation between severity of AD and the presence of RA.

RESULTS

Asthma was associated with AD in 40 patients (22.1%) and AR in 36 patients (19.9%). 10 patients (5.5%) had asthma and AR simultaneously. The association of RA (asthma or AR) was found in 66 cases of AD (36.5%); 37 males and 29 females showed at least one form of RA. The association of asthma with AD was the most common in the age group between 8 and 11 years (Fig. 2A). In the case of AR the prevalence was the most common in the age group between 20 and 23 years (Fig. 2B). The prevalence of asthma or AR seemed not to be different according to the sex although the number of male or female patients was small.

The data about the onset age of asthma was available in 37 out of 40 asthmatic patients and the average age at onset of asthma was 6 years (Fig. 3A). The data about the duration of asthma was available in 18 out of 40 patients and the average duration of asthma was 6 years. The data about the onset age of AR was available in 33 out of 36 AR patients and the average age at onset of AR was 12.4 years (Fig. 3B). The data about the duration of AR was available in 18 out of 36 patients

and the average duration of AR was 6.8 years. The age onset and the duration of asthma or AR seemed not to be different according to the sex although the number of male or female patients was small.

We could not find any difference in the severity of AD between pure AD patients and AD with RA even in the age group of 20-23 years (data not shown).

DISCUSSION

RA including asthma and AR are always mentioned as associated disorders with or complications of AD^{1,2}. Hay fever, atopic rhinitis, and AR are terms generally used synonymously². As atopic manifestations begin in the respiratory tract later than in the skin, age is a factor of considerable importance in patient surveys² and this is why the reported incidence of RA in AD was variable according to the ages of patients selected. In our study the incidence of RA in AD was 36.5% which is similar to the previous report¹⁻³.

Although there have been many clinical descriptions about AD and its associated RA, the data about the onset of asthma and AR was hardly mentioned except in a few references^{2,10}. There is still less information about the duration because the exact data can be derived only from a large scale very long follow-up study, not from the patients' or their parents' recall memory. Although our study was dependent on the recall memory of the patients themselves and/or parents, it showed that the average onset of asthma was 6 years. This is a little later than in the previous reports^{2,10}, whereas the average onset of AR was 12.4 years, a little earlier than in the previous report². However, it is very difficult to make direct comparisons, because age group included in each study are very different. Some cases of RA can precede AD and in our study asthma preceded dermatitis in 6 patients while AR preceded this condition in 5 patients. However, the general occurrence in the order of AD, asthma, and AR was all the same as in the other reports^{1,2,10}.

We could not find data which gave information on how long RA in AD lasted in the literature. Our data revealed that the average duration of asthma and AR was 6 years and 6.8 years, respectively. Considering both the onset age and the duration of RA in our data, we could guess the approximate

peak ages of asthma and AR. This guess was roughly consistent with our result that asthma was the most common in the age group between 8 and 11 years while AR was the most common in the age group between 20 and 23 years.

Our patient groups (Fig. 1) showed a prevalence of AD as if there were 2 peaks. We do not think this represents the actual prevalence of AD in Korea because patients were selected from the previous 6 months in the order of their visits to our hospital. The age group between 20 and 23 years represents persistent cases of AD into adult life when their AD is associated with RA as shown in Fig 2. It is likely that RA is a poor prognostic factor for AD. However, we could not find any difference in the severity of AD between pure AD patients and AD patients with RA. It seems that RA does not affect the severity of dermatitis.

A very large-scale epidemiological study with a long follow-up will be necessary to disclose more accurate data about the prevalence, onset and duration of RA in AD.

REFERENCES

1. Champion RH, Parish WE: Atopic dermatitis. In Champion RH, Burton JL, Ebling FJG (eds): *Textbook of Dermatology*. Blackwell Scientific Publications, Oxford, 1992, pp589-610.
2. Rajka G: Essential aspects of atopic dermatitis. Springer-Verlag, Berlin, 1989, pp35-38.
3. Pasternak B: The predilection of asthma in infantile eczema: a statistical approach. *J Pediatr* 66:164-165, 1965.
4. Rajka G: Essential aspects of atopic dermatitis. Springer-Verlag, Berlin, 1989, pp12-16.
5. Sampson HA: Atopic dermatitis. *Ann Allergy* 69:469-479, 1992.
6. Uehara M: Family background of respiratory atopy: a factor of serum IgE elevation in atopic dermatitis. *Acta Derm Venereol (Stockh)* 144(Suppl):78-82, 1989.
7. Uehara M, Sawai T: Familial background of respiratory atopy. *Arch Dermatol* 125:939-943, 1989.
8. Uehara M, Izukura R, Sawai T: Blood eosinophilia in atopic dermatitis. *Clin Exp Dermatol* 15:264-266, 1990.
9. Vickers CFJ: The natural history of atopic eczema. *Acta Derm Venereol (Stockh)* 92(Suppl):113-115, 1980.
10. Bonifazi E, Meneghini CL: Atopic dermatitis in the first six months of life. *Acta Derm Venereol (Stockh)* 144(Suppl):20-22, 1989.
11. Hanifin JM, Rajka G: Diagnostic features of atopic dermatitis. *Acta Derm Venereol (Stockh)* 92(Suppl):44-47, 1980.
12. Costa C, Rilliet A, Nicolet M, Saurat J-H: Scoring atopic dermatitis: the simpler the better? *Acta Derm Venereol (Stockh)* 69:41-45, 1989.