

# Prevalence of Childhood and Adolescent Atopic Dermatitis in a Japanese Population: Comparison with the Disease Frequency Examined 20 Years Ago

HISASHI SUGIURA, NAOKA UMEMOTO, HIDEKI DEGUCHI, YUHO MURATA, KEIKO TANAKA, TAKAYUKI SAWAI, MITSUYOSHI OMOTO, MASAMI UCHIYAMA, TAKASHI KIRIYAMA and MASAMI UEHARA

Department of Dermatology, Shiga University of Medical Science, Seta, Otsu, Japan

**To ascertain the prevalence of childhood and adolescent atopic dermatitis in a Japanese population, we clinically observed the total body of 5 to 6-year-old children (994 cases), 7 to 9-year-old children (1,240 cases), 10 to 12-year-old children (1,152 cases), 13 to 15-year-old children (1,670 cases), and 16 to 18-year-old adolescents (2,159 cases). The examination was performed in the spring of 1994–96, when exacerbation of childhood and adolescent atopic dermatitis most frequently occurs in Japan. Atopic dermatitis was observed in 24% of the 5 to 6-year group, in 19% of the 7 to 9-year group, in 15% of the 10 to 12-year group, in 14% of the 13 to 15-year group, and in 11% of the 16 to 18-year group. The prevalence of atopic dermatitis in 9 to 12-year-old children was two times and in 18-year-old adolescents five times as high as in similar age groups examined 20 years ago. Key words: chronicity of atopic dermatitis; environmental factor; epidemiology.**

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H. Sugiura, Department of Dermatology, Shiga University of Medical Science, Seta Otsu 520–2192, Japan.

Determining the prevalence of atopic dermatitis (AD) is important for understanding the chronicity of the disease and the environmental aggravating factors (1, 2). Many studies have suggested that the prevalence of AD has increased during recent decades in Europe (3–8) and Japan (9–11). However, the prevalence has not been sufficiently examined over a wide age group in a general population in Japan (9–11).

Twenty years ago, we performed clinical examinations to determine the prevalence of childhood and adolescent AD in a Japanese population (12, 13). To see whether there has been an increase, we recently examined the prevalence again in exactly the same district.

## MATERIALS AND METHODS

### Subjects

Nine-hundred-and-ninety-four kindergarten pupils (5y : 517, 6y : 477), 1,240 lower grade elementary school children (7y : 559, 8y : 342, 9y : 339), 1,152 higher grade elementary school children (10y : 285, 11y : 263, 12y : 604), 1,670 junior high school students (13y : 601, 14y : 295, 15y : 774), and 2,159 high school students (16y : 649, 17y : 691, 18y : 819) were included in the present study. We consecutively examined all subjects at the regular school health examination held by the Health Care Division of Otsu City, Shiga Prefecture, Japan.

### Diagnosis of AD

Diagnosis of AD was based on the morphological appearance and distribution of skin lesions as described by Hill & Sulzberger (14). All children of atopic dermatitis in the present study fulfilled the diagnostic criteria of Hanifin & Rajka (15).

### Season of the examination

Since AD in Japan aggravates most frequently in the spring (13), the present examination was performed in April and May (1994) for the children of kindergarten and lower grade elementary school, in April and May (1995) for the children of higher grade elementary school and junior high school, and in April and May (1996) for the students of senior high school. Thus, the present study was carried out in the same season as it was performed 20 years ago (12, 13).

### Observation

The total body of each case was carefully observed and the distribution of eczematous lesions was recorded. The severity of AD was determined by the following criteria: *mild*, presence of skin lesions on less than 10% of the total body surface; *moderate*, involvement of 10–50% of the body surface; *severe*, involvement of more than 50% of the body surface.

## RESULTS

### Prevalence of AD

AD was observed in 24% (239/994) of the kindergarten group, in 19% (232/1,240) of the lower grade elementary school group, in 15% (167/1,152) of the higher grade elementary school group, in 14% (228/1,670) of the junior high school group, and in 11% (244/2,159) of the senior high school group. Thus, the prevalence of AD gradually decreased with increasing age.

### Disease severity

The prevalences of mild, moderate, and severe cases were respectively 81%, 18%, and 1% in the kindergarten group, 86%, 13%, and 1% in the lower grade elementary school group, 87%, 11%, and 2% in the higher grade elementary school group, 82%, 16%, and 2% in the junior high school group, and 81%, 17%, and 2% in the senior high school group.

## DISCUSSION

The study has clarified that the prevalence of AD in the age range 5–18 years in Japan shows a gradual decrease with age, which supports previous reports that the incidence gradually decreases from infants to young adults (16, 17). The study also shows that the majority of AD cases in the Japanese population are mild (80–85%); severe cases are rare (1–2%).

Recently, we reported that the prevalences of infantile AD in Japanese 4 and 10-month-old children born in 1992 were 30 and 32%, respectively (18). These frequencies were almost the same as the prevalence of infantile AD observed 20 years ago (12), indicating that the occurrence of infantile AD in the Japanese population is considerably higher than the frequency reported in European studies from the early 1970s (3, 4, 7). It might be that Japanese infants have been exposed to "maximal" environmental influence in the development of AD already 20 years ago.

On the other hand, the prevalence of AD 20 years ago was 8% in the 9–12 age group and 2% in the 18–20 age group (12, 13); in the present study the prevalence was 15% in the 9–12 age group and 11% in the 16–18 year age group. These findings indicate that the prevalence of AD in the 9–12 age group has doubled in the past 20 years, and in 18-year-old adolescents has increased five times. Various studies report that the prevalence of AD has increased during the past several decades in both Europe (3–8) and Japan (9–11). A few years ago Williams (19) suggested that it was possible the chronicity of AD had increased; we suggest that a decreased cure rate may at least in part be responsible for the augmented prevalence of childhood and adolescent AD that we have observed in the present investigation. The reason for the decrease in the cure rate is not clear. From our clinical experience it seems that it is mainly due to the increase of environmental aggravating factors and social stress, as well as the rampancy of unscientific folk remedies due to a widespread phobia of steroids (20) that have been promoted with the recent increase of red face syndrome in Japan (21).

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