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1. 研究テーマ

中国におけるスギ花粉症の実態調査とその対策

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Cedar Pollinosis in China —An epidemiological and clinical study in south China

【Abstract】 Objective: To confirm cedar pollinosis in China and investigate the prevalence of it. **Methods:** From 1995, an epidemiological survey on nasal allergy was carried out among 1660 primary and middle school students and 2167 university students in 3 provinces of south China (Jiangsu, Guangdong, Yunnan), including questionnaire investigation, nasal inspection, and scratch test. Secondly, clinical observation was made to the patients of nasal allergy in the First Affiliated Hospital of Nanjing Medical University in the spring of 1998. **Results:** 1. The epidemiological survey showed that the total positive rate of cedar pollen scratch test was 3.8%, and the prevalence of cedar pollinosis was 0.26%. 2. The clinical investigation showed that 16.7% of patients were hypersensitive to cedar pollen. **Conclusions:** Cedar pollinosis does exist in China. However the prevalence was low, which was related to the low quantity of cedar pollen and other background factors.

【Key words】 cedar pollinosis, *Cryptomeria japonica*, *Cryptomeria fortunei*, China

Cedar Pollinosis, generally referred to Japanese cedar Pollinosis, was reported in Nikko of Japan by Horiguchi and Saito^[1] in 1964 and was regarded as the characteristic pollinosis of Japan^[2]. It had not been reported ever other than in Japan. However, in China, cedar pollinosis was paid little attention to because of its low prevalence at present.

It is well known that cedar came into being even about 2 million years ago and mainly existed in south China and Japan^[3], and all kinds of cedar were of the s

same family and the same genus at that time when Japanese and Chinese land were connected together. With the development of geography and history the both lands separated, which resulted in the separation of Chinese cedar (*Cryptomeria fortunei*, Cf) and Japanese cedar (*Cryptomeria japonica*, Cj).

It is self-proved that pollinosis should exist where there is pollen. As the plant of cedar^[4] and the flying of cedar pollen^[5] had been recognized in many regions of China, does cedar pollinosis exist in China? From 1995, we carried out an epidemiological survey and clinic investigation on nasal allergy, and found cedar pollinosis in China.

Material and Methods

1. About epidemiological survey

(1) Subjects

Freshmen and seniors of Nanjing Medical University in Nanjing, Sun Yat-sen University of Medical Sciences in Guangzhou and Kunming medical college in Kunming, 1st and 4th grade students in Lili Town primary school, 1st grade students in both Lili Town middle and high school in Wujiang of Jiangsu Province, amounting to 3280 students, aged from 6 to 24 years, accepted the survey. The distribution of subjects was listed in table 1.

(2) Methods

The process of survey are : 1) Questionnaire investigation: to grasp the nasal symptoms; 2) Nasal inspection: conducted by the same doctor to confirm the signs; 3) Allergen scratch test: using the allergen extracts of *Cryptomeria japonica* produced by Torii Pharmacological Co. Ltd. The contrast liquid was 50% glycerin liquid.

(3) Date and Place

We held the survey in university and school. The date were Oct 7, 1995, Oct 29, 1996, Sep 29-30, 1997, Sep 25, 1998 in Nanjing; May 6, 1996, May 5, 1997, May 4, 1998 in Lili Town; Oct 25, 1996 in Guangzhou; Sep 27, 1998 in Kunming. Questionnaire survey was completed one month early.

(4) Criteria of scratch test and nasal allergy

According to Japanese Allergy Academic Society, the positive reaction should be decided if papule is over 5mm or patch over 15mm after 20 minutes of scratch, while what is under 2 times of contrast liquid should be omitted.

Nasal allergy should be diagnosed if 3 points are fitted at the same time: 1)

At least 2 or 3 of the main symptoms of nasal allergy (sneeze, snivel, nasal obstruction), 2) Signs of nasal allergy, 3) Positive reaction to at least one kind of allergen in scratch test.

2. About clinic investigation From February to April of 1998 when cedar pollen was flying, skin allergen test, including scratch test and nasal provocation test, were conducted among 30 patients of nasal allergy (male 14, female 16, aged 15-47 years), in the department of Otolaryngology, First Affiliated Hospital of Nanjing Medical University.

Results

1. About epidemiological survey

(1) Positive rate of scratch test (Table 2.)

The total positive rate of cedar was 3.8%.

(2) Prevalence of nasal allergy

According to the criteria, among 3827 objects, cedar pollinosis were 10 cases (0.26%).

2. About clinic investigation

Clinical investigation showed that 5 cases (16.7%) were hypersensitive to cedar pollen. The first case of cedar pollinosis in China was reported as follows.

Patient: 32-year old, female

Symptom: sneeze, snivel and nasal obstruction

Family history: Her mother had nasal allergy.

Present history: In April of 1989, these symptoms occurred in the suburbs of Nanjing. From then on the symptoms occurred in spring and autumn every year. Nasal allergy was diagnosed in 1990 and treated by anti-histamine drugs. From 1993, it turned into perennial and worsened in spring and autumn, combined with ophthalmic and laryngological symptoms. On March 3 of 1998, she came to the department of Otolaryngology, First Affiliated Hospital of Nanjing Medical University for treatment.

Examination: Swollen and white inferior turbinate and watery rhinorrhea could be observed. In scratch test, positive reaction was shown to allergens of Cedar, Orchard, Ragweed, House Dust and Mite. Nasal mucosa test using cedar pollen allergen showed positive.

Discussion

It is well known that cedar is evergreen arbor, and as the main afforestation tree it exists almost in whole Japan. It is also considered that cedar pollen is the main sensitizing pollen in Japan and belongs to Japan only^[2]. The prevalence of cedar pollinosis is so high that it is said to be the 「national disease」 in Japan^[6].

From the Chinese Botanical annals^[7], cedar includes 2 species: *Cryptomeria fortunei* and *Cryptomeria japonica*. Cf exists only in China, distributing in southeast China; Cj yields in Japan originally and is also imported in southeast China (figure 1) and it is testified by our observation, in which many cedars were found in Nanjing, Kunming, Shanxi and Mountain Tianmu. Further, through the national survey of airborne and allergic pollen over whole China in 1980s^[5], cedar pollen had been affirmed in many regions. The results were summarized into the map (figure 2). The quantity of cedar pollen constituted 0.02%-11.27% of the total quantity of a whole year, especially in Chengdu(11.27%), Wuhan(6.16%), Nanchang(3.27%), Xi'an(1.78%) and so on. The last study in 7 districts of Wuhan showed that it was 38.5% (5523 pollens per annum)^[8].

It was affirmed that Cj and Cf were of the same family and genus through RFLP analysis of PCR-amplified specific chloroplast genes by Japanese scholars^[9]. According to the last research of our group on genetic characteristics of the cedar growing in Mountain Tianmu, China and Yakushima and Izu Ohshima islands, Japan, only the slight genetic variation seemed to occur and the morphological features between Cf and Cj were very similar to each other^[10]. It could be considered that Cf and Cj had the originally equal origin and were distinguished as one form by the allozyme, and the necessity of dividing as a species was not indicated.

It became obvious that cedar pollinosis does also exist in China. According to our investigation, the prevalence rate of cedar pollinosis was 0.26%. As for Jiangsu Province, the potential patients of cedar pollinosis would reach about 200 thousands based on the whole population of 80 million. In China, that cedar pollinosis has been paid little attention to before is attributed to the following factors: 1) The quantity of cedar pollen does not predominate in airborne pollen in most regions of China, the sensitizing rate was low and cedar pollinosis is not prevalent at present. 2) Meanwhile, there is no extracts of cedar pollen that could be applied for clinic. 3) The main kinds of allergic pollen in China are *Artemisia* and *Ambrosia*, the doctor does not pay much attention to cedar pollinosis. 4) Only a few patients with severe symptoms came to the hospital. Nowadays, u

nder the campaign of 「Planting and afforesting, greenizing the country」, cedar is wildly used in the afforestation^[11]. With the development of society and economy, spread of afforestation, variance of circumstance, it is possible that cedar pollinosis would increase in China as it did in Japan.

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