

## Infra-auricular Fissures in Atopic Dermatitis

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**Retro-auricular or auricular dermatitis in atopic dermatitis (AD) is common and important for the diagnosis of AD in infancy and even in adulthood. Particularly, "infra-auricular fissures", acute eczematous changes like fissures at the adhesive junction of ear lobes, seem to be prominent features for the diagnosis of AD. Of 137 patients with AD, 81.8% showed present or past existence of infra-auricular fissures, but only one of the 30 controls. Of the 46 patients with severe AD, 98% had infra-auricular fissures, compared to 74% in those with moderate and mild AD. Our findings suggest that infra-auricular fissures are important for the diagnosis of AD and should be cited in a list of criteria for the diagnosis of AD. Key words: Auricular dermatitis; Ear; Ear lobe.**

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Atopic dermatitis (AD) is a common chronic inflammatory skin disease, which is most prevalent during childhood. Pruritic eczematous eruptions are present in the flexor surfaces of extremities, neck, wrists, and ankles, although the distribution of the rash varies with age. Retro-auricular or auricular dermatitis is common and important for the diagnosis of AD in infancy (1), as shown in modified criteria for the young infant proposed by Seymour et al. (2). Auricular eczema, however, is not listed even in minor features in an internationally accepted guideline of AD (3).

"Infra-auricular fissures", acute eczematous changes like fissure at the adhesive junction of ear lobes (Fig. 1), are often mentioned as a specific clinical feature for the diagnosis of AD in Japanese textbooks, whereas there are few descriptions of these lesions in English textbooks or literature (4–6).

We investigated previous and present occurrences of infra-auricular fissures in patients with AD and evaluated the prevalence and importance of the rash in AD.

### PATIENTS AND METHODS

One hundred and thirty-seven patients (65 males, 72 females; mean age years  $19.5 \pm 8.7$ , age range 0–52 years) with AD conforming to the guideline of Hanifin & Rajka (3) were enrolled for this study. They were asked about the past existence of auricular dermatitis, particularly an eczematous crusted fissure at the junction of the ear lobe and the face (Fig. 1), and we examined the ears and the shape of the ear lobes in all patients. In addition, severity of the dermatitis on the whole body was also assessed according to the criteria of Rajka (7). Thirty patients with non-atopic skin diseases served as controls.

### RESULTS

All patients with AD and control subjects in this study were

listed in Fig. 2 in terms of sex, age, shape of ear lobes (Fig. 3) and infra-auricular fissures. Of 137 patients, 112 (81.8%) showed present or past existence of infra-auricular fissures, and this incidence was significantly ( $p < 0.0001$ ) higher compared to that (3.3%) in control subjects. The one patient with infra-auricular fissures in the control group, a 14-year-old boy, visited our clinic for suffering from arthropod bites, and he had experienced the rash in infancy but showed no atopic signs. In all of the 112 patients with infra-auricular fissures, the fissures were bilateral. The shapes of ear lobes in AD patients were classified into three types (Fig. 3). Fifty-six patients showed type I, 54 type II, and 27 type III. No patient had two different ear lobes. The prevalence of infra-auricular fissures in each type of ear lobe in AD patients was 89.3%, 77.8%, and 74.1%, respectively. The highest incidence of infra-auricular fissures was demonstrated in type I ear lobe, although there was no significant difference. With respect to the severity of AD, 45 (97.8%) of 46 patients with severe AD had infra-auricular fissures on both sides, and these skin changes seemed to appear when their dermatitis was exacerbated. This prevalence of infra-auricular fissures in severe AD patients was significantly ( $p < 0.002$ ) higher compared to that (73.6%) in patients with moderate and mild dermatitis.

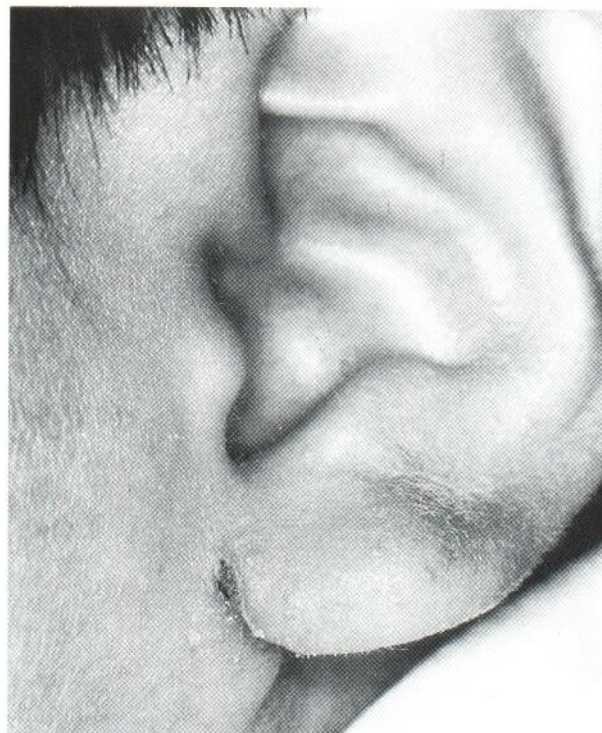


Fig. 1. Clinical feature of infra-auricular fissure, acute eczematous changes like fissures at the adhesive junction of ear lobe.



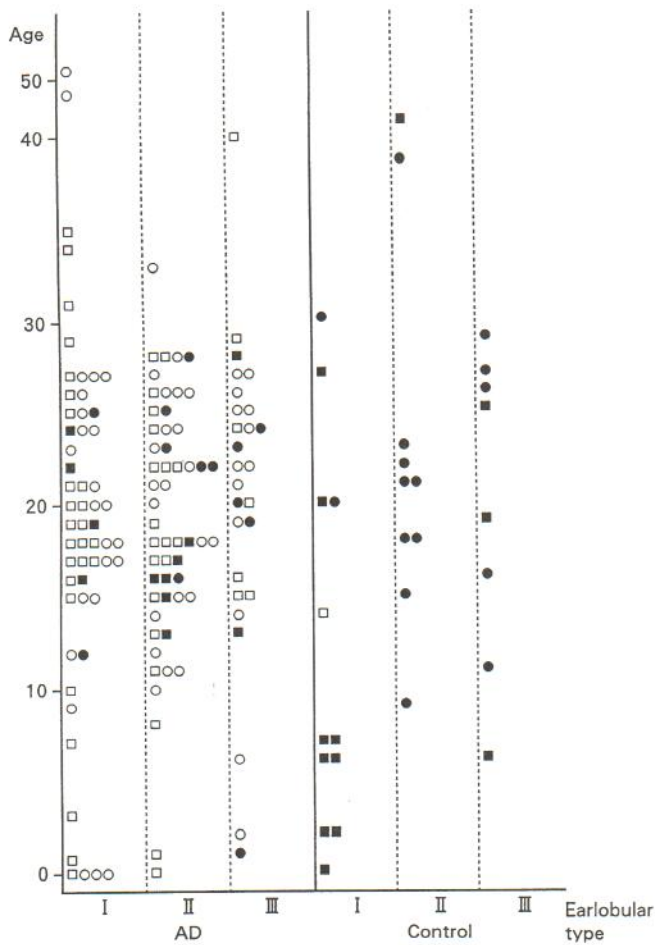


Fig. 2. Earlobular type and age distribution in atopic dermatitis (AD) patients and controls. (Open □ (Male) ○ (Female) signs indicate infra-auricular fissures; filled ■ (Male) ● (Female) signs indicate no fissures.

DISCUSSION

It has been widely assumed that retro-auricular and auricular dermatitis is a phenotypic marker of AD in infancy (1, 2). However, to our knowledge there is no report in the literature that definitely supports this assumption. Marks et al. (6) studied allergic children with asthma and allergic rhinitis but without atopic dermatitis and reported that an eczematous eruption in the superior retro-auricular areas of the scalp and often on the posterior aspects of the pinnas might be seen in approximately 30–40% of them. An eczematous rash in the superior retro-auricular area has also been reported to be a reliable sign of atopy in approximately 30% of children and occurs even in the absence of a previous history of atopic or seborrheic dermatitis or ichthyosis (8). These reports and our findings support the hypothesis that auricular and retro-auricular dermatitis may be one of the specific symptoms of atopic diathesis; particularly infra-auricular fissures, as shown in our study, are prominent in patients with AD. We recognize that the eruption is particular in its location in the sulcus where the terminal crest of the helix merges with the facial skin and showing fissuring eczematous changes on the area. A similar eczematous eruption on the retro-auricular or auricular areas was occasionally seen in patients with seborrheic dermatitis, but its prevalence was quite low.

All of these findings strongly suggest that infra-auricular fissures, if the appearance of this sign at any point of time during the course of AD was retained, occur in almost all patients with AD. Patients with severe AD tend to show the rash in higher frequency. In view of the frequent association of infra-auricular fissures in AD, this sign is prominent for the diagnosis of AD. We believe that it should be cited in a list of criteria for the diagnosis of AD.

We do not have any clear explanation for the predilection of the fissuring eczema at the superior adhesive site of ears or on

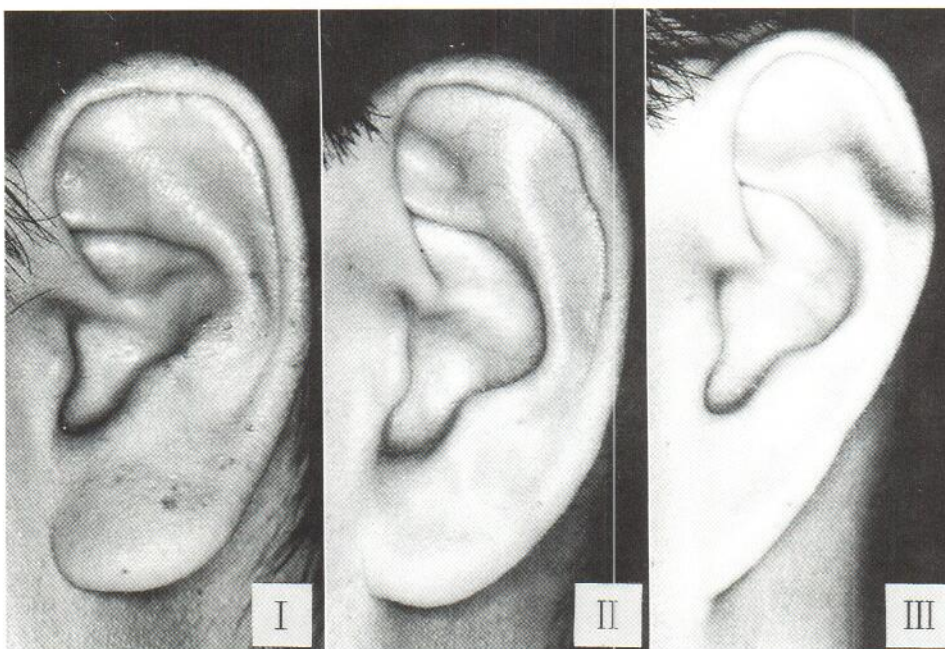


Fig. 3. Type of ear lobe (I: Type I; II: Type II; III: Type III).

the retro-auricular fold and more often at the inferior adhesive site of ear lobes, although eczematous fissures occasionally develop on the posterior site or at the superior part of ears. One possible explanation is that on areas such as sulcus and folds small amounts of detergent may remain and become irritant factors, resulting in eczematous changes after insufficient washing off of soap and shampoo, and microorganisms such as *Staphylococcus aureus* may more densely colonize on these sites. Much more attention should be paid to this particular skin rash, "infra-auricular fissures", for the diagnosis of AD.

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