In the diagnosis of atopic eczema (atopic dermatitis), the criteria established by Hanifin and Rajka [1] are those most often referred to. However, besides full-blown cases of atopic eczema, there are minor or atypical disease manifestations. The description of these forms can be attributed primarily to French authors in the mid-1960s and early 1970s [2–6] and to Herzberg [7–9] in the German-speaking sphere. Special credit is due to this author for having alluded to atopic eczema found usually in two but occasionally even in three and four generations of patients, based on his clinical observations and skin reaction studies.

These special forms and minimal variants may occur alone, together, or alternate with the more typical eczematous, lichenoid, pruriginous, and seborrheic forms whose occurrence is related to age, individual predisposition, and disease duration, and is indicative of their status as atopic skin manifestations [1]. When occurring alone, without the major features of atopic eczema, and without other atopic manifestations, such as allergic rhinitis, allergic asthma, or food allergy, their classification as a minimal form of atopic eczema may be disputable, especially in the intrinsic type or in non-IgE-associated atopic eczema/dermatitis syndrome in which no demonstrable sensitization to atopic allergens exists [10–15]. Thus, the diagnosis can only be finally accepted on the basis of a family and personal history, progress monitoring, further clinical features related to other stigmata of the atopic constitution, positive skin reactions (e.g., white dermography), exclusion of a contact allergy to haptens, and histology, which demonstrates eczematous, inflammatory changes.

Some of these variants attract attention because of the particular morphological characteristics, others because of the particular location, such as the eyelids, lips, nipples, vulva, finger pads and toes.

### 8.1 Localized Minimal Variants of Atopic Eczema

Such localized variants include:

- Lower lid eczema, frequently occurring in the spring as a pollinosis equivalent [11] (Figs. 8.1, 8.2)

![Fig. 8.1. Atopic lower lid eczema (31-year-old female with grass pollen allergy)](image1)

![Fig. 8.2. Atopic eyelid eczema (35-year-old man with pollinosis)](image2)
- Exfoliating cheilitis with perlèche (Figs. 8.3, 8.4)
- Earlobe rhagades or retroauricular intertrigo (Figs. 8.5, 8.6)

Rhagades of the nasal orifices, often with chronic nasal obstruction as the expression of a perennial allergic rhinitis

Fig. 8.3. Exfoliating cheilitis with perlèche (6-year-old boy)

Fig. 8.4. Cheilitis with perioral eczema (8-year-old girl)

Fig. 8.5. Earlobe rhagades (6-year-old boy)

Fig. 8.6. Retroauricular intertrigo (20-year-old man)
- Nipple eczema (Fig. 8.7)
- Genital eczema (vulva, penis [Fig. 8.8], or scrotum)
- Isolated eczema of the dorsum penis with painful rhagades (17-year-old man) (Fig. 8.8)
- Tylotic, rhagadiform, finger pad eczema (pulpite sèche or pulpite digitale keratosique craquelée récidivante; “atopic hands”) (Figs. 8.9, 8.10)
- Similar manifestations on the toes (“atopic feet” or “atopic winter feet”), often misdiagnosed as foot mycosis (Figs. 8.11, 8.12)
- “Atopic hands”: tylotic, rhagadiform, fingerpad eczema (pulpite sèche or pulpite digitale keratosique craquelée récidivante) (23-year-old female) (Fig. 8.9)
- “Atopic feet” or “atopic winter feet,” dorsal aspect (5-year-old boy) (Fig. 8.11)
- “Atopic feet” or “atopic winter feet,” plantar aspect (same 5-year-old boy as in Fig. 8.11) (Fig. 8.12)
According to Herzberg [7–9], over 70% of patients with fingerpad eczema are women, in whom the role of skin traumatization in influencing localization is emphasized by the fact that the pads of the first to third fingers are initially affected and those of the fourth and fifth fingers only later. Furthermore in the right-handed person, the right hand is more affected than in the left. Apart from the clinical signs of a pale erythema, keratosis, scaling, and fissuring, concomitant pain leads subjectively to impairment of function in the involved hand. As a practical sign, delicate materials such as nylon stockings are torn by the sharp edges of the fissures when being put on or taken off. Atopic hands and atopic feet occur more often in children, and often improve during summer holidays at the seaside, and after puberty.

In our follow-up study of 47 patients who had suffered from atopic eczema in infancy (<2 years of age), which was conducted using a questionnaire and personal examination at the mean age of 23 years, it was found that 72.3% of them were still suffering from atopic skin problems [16]. In 66% of the 47 patients, minor manifestations were present, most frequently perlèches (40.4%), retroauricular intertrigo (34%), eyelid eczema (21%), and fingerpad eczema (21.3%).

The allocation of these localized variants to atopic eczema obviously postulates negative epicutaneous testing to possible contact allergens (standard series, perioral group, shoe eczema group, etc.). A prospective study of 195 patients with typical atopic eczema (average age, 8.5 years) and 113 controls without eczema, [17] came to the conclusion that retroauricular rhagades, cheilitis, nipple eczema, and pityriasis alba are statistically highly significant (p<0.005) associated with atopic eczema, but that Dennie-Morgan infraorbital fold and anterior neck creases are not. Also controversial are the allocation to atopic eczema of the “dirty neck” sign, a reticular pigmentation of the neck, that makes it appear unwashed [18], and the correlation between “geographic tongue” and atopy [19].

8.2 Juvenile Plantar Dermatosis

Juvenile plantar dermatosis is a painful variant of atopic eczema, frequently occurring in children. It is chiefly observed on the anterior part of the sole and is characterized by erythema, hyperkeratosis, and rhagades (Figs. 8.13, 8.14). Histologically, there is an eczematous dermatitis with spongiosis and lymphohistiocytic, subepidermal, and perivascular infiltration. As early as 1966, Racouchot [4] had explicitly alluded to its relationship with the group of atopic forms: “La kératose plantaire et les fissures hivernales des bords des talons sont à retenir” (Plantar hyperkeratosis and rhagades occurring in winter at the edges of the heels must be observed). In 1968 Silvers and Glickman [20] gave a thorough description of the special features of atopic eczema of the feet in children. On 1972, this disorder became well known due to a publication by Moller [21], who proposed the name of “atopic winter feet.” However, it also occurs in the summer months, so that in practice it is often misdiagnosed as a foot mycosis and thus erroneously treated with antimycotics.

Verbov [22] as well as Hambly and Wilkinson [23] described “forefoot eczema” in the context of atopic eczema, Mackie and Husain [24] considered “juvenile plantar dermatosis” (see below) (Figs. 8.13, 8.14).
plantar dermatosis” to be a new entity since only nine of the 102 children they studied had manifest atopy. They attributed the cause to nylon socks. Subsequently, other terms were proposed such as “dermatitis plantaris sicca” [25, 26], “peridigital dermatitis” [27], or “wet and dry foot syndrome” [28], but the term most commonly used today is the simple descriptive “juvenile plantar dermatosis” (JPD). Association with atopy has been found by various authors, ranging from 50.3% of patients [29] to 61% [23], and 74% [30]. Other authors found no preponderance of atopy [24, 31]. Rajka [32] suggested distinguishing between an “atopy-associated” and a “nonatopic” variant. In both types, along with a possible constitutional weakness of the skin, various other endogenous and exogenous factors have been discussed as pathogenetic, such as frequently repeated microtraumata (“frictional contact dermatitis”), a clammy microclimate due to the wearing of synthetic socks and high shoes, or contact allergy to parts of shoes. Pirkl et al. [33] suggested broad-spectrum epicutaneous testing in JPD in the following circumstances:

- The appearance of JPD after wearing new shoes
- Characteristic JPD which spreads secondarily over the heels, or dorsum of the foot or toes, or the outer border of the foot
- Severe JPD with primary involvement of the heels.

If the rare cases of allergic contact eczema are excluded, follow-up studies have shown that complete recovery may be expected with puberty in the majority of patients after a course of 7–8 years on average [28, 34, 35].

8.3 Juvenile Papular Dermatosis: The Papular Form of Atopic Eczema

Juvenile papular dermatosis (Dermatitis papulosa juvenilis) is characterized by lichenoid flat papules, often hypopigmented, with a predilection for the dorsa of the hands, the elbows, and the knees [36]. Fölster-Holst et al. [37] reported a 9-year-old boy who developed particularly severe lesions of juvenile papular dermatosis on the face and the back of the knee and extreme pruritus during the summer. In fact, the disease affects children in the summer months. Sutton first described this skin disease in 1956 under the name of “summertime pityriasis of the elbow and knee” [38]. Others terms are “frictional lichenoid eruption in children” [39], “summer lichenoid dermatitis of the elbows in children” [40], “dermatite du toboggan” [41], “Sutton’s summer prurigo of the elbows” [42], “dermatitis papulosa juvenilis” [43], “papular neurodermatitis” [44], and “recurrent papular eruption of childhood” [45]. Changes observed in biopsy specimens show hyperkeratosis, a moderate degree of acanthosis and a lymphocytic perivascular infiltrate in the upper dermis [37, 44]. The pathogenetic influence of such rough materials as sand and wool and of a photosensitivity in patients with atopic predisposition is suggested by many authors [44–46]. Already in 1983, we assigned these acro-located, small papular lesions to atopic eczema based on family and personal history, demonstration of specific IgE to inhaled or food allergens, and an eczematous histologic picture [44] (Figs. 8.15–8.18).
The occurrence mainly in the spring and summer, often in association with pollinosis, is pathogenetically suggestive of an inhaled precipitant such as a hay fever equivalent [11, 47], in addition to a mechanical component (friction, chafing) and photosensitivity.

8.4 Patchy Pityriasisiform Lichenoid Eczema: The Follicular Form of Atopic Eczema

Patchy pityriasisform lichenoid eczema is a dry, only slightly itching, follicular form of atopic eczema occurring in childhood. Its first description is attributable to Japanese authors as far back as 1950 [48]. In a 1966 paper published in German, Kitamura [49] mentioned that together with Takahashi and Sasagawa he had described a plaque-shaped, lichenoid, scaly eczema as an independent dry type of childhood eczema. This type, evidently common in Japan, was allocated by Sasagawa in 1967 to the group of atopic eczema [50]. In 1981, we described this at that time scarcely known manifestation of atopic eczema in childhood [51]. Thus, clinically there are partly confluent areas with densely juxtaposed, mildly bran-like, scaly, nonhyperkeratotic, skin-colored papules (Figs. 8.19–8.21). They are found, with a generally dry integument, especially on the trunk but also on the nape of the neck and the knees. Histologically, these itchy “goose-flesh spots” exhibit a spongiosis of the follicular epithelium and an intra- and perifollicular lymphohistiocytic infiltration, which indicated the eczematous nature of this condi-
Fig. 8.18. Histologic findings in papule of right knee: spongiosis in the epidermis, lymphohistiocytic perivascular infiltrate in the dermis (same patient as in Fig. 8.17)

Fig. 8.19. Follicular form of atopic eczema (patchy pityriasis/lichenoid eczema, Kitamura-Takahashi-Sasagawa): plaque-shaped “goose-flesh spots” on infrascapular region of back (1-year-old boy, dark skinned)

Fig. 8.20. Follicular form of atopic eczema: closely packed, skin-colored follicular papules on the trunk (3-year-old boy)

tion [48–51] (Fig. 8.22). Pruritus is usually present, though not always severe. Mildly scaly depigmented areas, rather like pityriasis alba [52, 53], and isolated, frequently asymmetric, typical lichenified foci on the backs of the hands or elbows are occasionally present. In our series, a discrete perennial or seasonal allergic rhinitis was frequently associated. Progression of the disease is observed particularly in winter, whereas summer visits to the seaside usually lead to improvement or healing of the rash. Ofuji and Uehara [54] also found similar itchy follicular papules in 96% of their patients with atopic eczema, particularly on the lateral parts of the trunk. They suggested that these lesions probably constitute the primary efflorescence of atopic eczema.
Fig. 8.21. Histologic findings showed the follicular form of atopic eczema in a 10-year-old girl: follicular papule with spongiosis of the epidermis and lymphohistiocytic intra- and perifollicular infiltration.

Differential diagnosis requires distinction from suprafollicular keratosis, follicular hyperkeratosis in the context of an autosomal dominant ichthyosis vulgaris, lichen planopilaris, lichen nitidus, and the various lichenoid id-reactions, e.g., mykid or Gianotti-Crosti syndrome [55].

8.5 Comments

The knowledge of the minimal variants of atopic eczema, together with the evaluation of constitutional atopy stigmata, is a prerequisite for the correct diagnosis and appropriate therapy. An atopic background should be carefully assessed by allergy investigations (skin prick tests and IgE determination to environmental allergens and fungi, e.g., *Malassezia sympodialis* [56]). Moreover, it would be of interest to perform atopy patch tests to standard aeroallergens, food, and fungi in these conditions, which are often non-IgE-associated, to evaluate cell-mediated immunity. There is also a need for setting up cohort studies relating to the natural history of such atypical or minimal forms of atopic eczema, especially of the so-called intrinsic or non-IgE-associated type [57, 58].
References

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