Adult-onset atopic dermatitis

Esen Ozkaya, MD
Istanbul, Turkey

Adult-onset atopic dermatitis (AD) is a recently introduced subgroup of AD. Apart from the most typical flexural lichenified/exudative pattern in adults, patients may also have nontypical morphology and localization. The aim of this retrospective study was to find the frequency of nontypical morphology and localization in adult-onset AD and to evaluate the accuracy of United Kingdom Working Party's criteria in detecting those cases. Among 376 patients consecutively diagnosed with AD according to criteria of a previous study, 63 patients (34 women and 29 men) (16.8%) with onset of AD after the age of 18 years were allocated to the adult-onset group. A total of 7 patients (11.1%) had nonflexural involvement with nummular (6.3%), prurigo-like (3.2%), or follicular (1.6%) patterns that could not be attributed to contact sensitivities. A total of 14 patients (22.2%) did not fulfill the United Kingdom Working Party's criteria. It was interesting that United Kingdom Working Party's criteria did not cover the same patients as did the previous study's criteria in nearly one fourth of the cases. (J Am Acad Dermatol 2005;52:579-82.)

Adult-onset atopic dermatitis (AD) is a newly introduced subgroup of AD.[1-4] Apart from the most typical flexural localization and eczematous pattern in adults, patients may also have a nonflexural distribution[2] and other morphologic variants such as nummular or prurigo-like pattern.[5,6] The aim of this retrospective study was to find the frequency of nontypical morphology and localization of dermatitis in patients with adult-onset AD diagnosed according to the criteria of Hanifin and Rajka.[7] Furthermore, the accuracy of United Kingdom (UK) Working Party's criteria[8] in detecting those patients was evaluated.

PATIENTS AND METHODS

Retrospective analysis of the patients' files revealed a total number of 376 patients with AD diagnosed consecutively according to the criteria of Hanifin and Rajka[7] in our outpatient clinic between June 1996 and June 2003. All of the patients were white. Of the patients, 63 (16.8%) were allocated to the adult-onset group as the age of 18 years was arbitrarily used as the cut-off mark. The severity of AD was assessed according to the Rajka and Langeland score.[9]

Patients with or without typical morphology and distribution were noted. Morphology of dermatitis was evaluated as follows: typical lichenified/exudative eczematous pattern or other variants such as nummular, prurigo-like, follicular, seborrheic dermatitis-like, and mixed patterns.

Localization of dermatitis was evaluated as follows: typical flexural sites (antecubital/popliteal/neck/wrist/ankle) with or without involvement of other parts of the body, and nonflexural involvement. Site of onset was also recorded.

Concomitant mucosal atopic disease (allergic rhinoconjunctivitis and/or bronchial asthma) was determined according to personal history, skin prick testing (Hal-Brial, Haarlem, Holland), and/or specific IgE levels using UniCAP/Pharmacia CAP System allergens (Pharmacia and Upjohn Diagnostics, Sweden) against a selection of 9 aeroallergens (*Dermatophagoides pteronyssinus*, *Dermatophagoides farinae*, *Alternaria alternata*, *Cladosporium herbarum*, *Artemisia vulgaris*, *Secale cereale*, grass mix, tree mix, and cat hair). Family history of AD and/or mucosal atopy was recorded.

Serum total IgE levels were determined using UniCAP/Pharmacia CAP System (Pharmacia and Upjohn Diagnostics). Levels more than 150 IU/mL were regarded as high.

Patch test with an extended European standard series of 32 allergens[10] (Chemotechnique Diagnostics, Sweden, and Hal-Brial) were performed in 19 patients (12 patients with hand lesions and 7 with nontypical morphology and distribution of AD) to rule out possible contact factors. In addition, mycologic

From the Department of Dermatology, Istanbul University.
Funding sources: None.
Conflicts of interest: None identified.
Accepted for publication November 9, 2004.
Reprint requests: Esen Ozkaya, MD, Istanbul Üniversitesi, Istanbul Tıp Fakültesi, Dermatoloji Anabilim Dalı, 34093 Çapa-Istanbul, Turkey. E-mail: profeo@istanbul.edu.tr.
0190-9622/$30.00

doi:10.1016/j.jaad.2004.11.037

Table I. Localization in adult-onset atopic dermatitis

Localization	No. (%) of patients (N = 63)
Flexural alone (antecubital/popliteal/ neck/wrist/ankle)	4 (6.3)
Flexural and other sites	*52 (82.5)
Face	31 (49.2)
Hands	29 (46.0)
Eyelids	26 (41.3)
Extansors (elbow/knee/ outer aspects of limbs)	21 (33.3)
Lips	19 (30.2)
Trunk	19 (30.2)
Feet	12 (19.1)
Seborrheic areas (scalp/retroauricular)	9 (14.3)
Nipple	3 (4.8)
Generalized	3 (4.8)
Nonflexural alone	7 (11.1)

*The total number of patients with involvement of flexural and each other site are more than 52 because patients can have multiple site involvement.

and bacteriologic examinations were performed for patients with nummular lesions.

RESULTS

The age range of 63 patients (34 women and 29 men) was 19 to 71 years (mean: 31.6) with an age of onset range of 18 to 71 years (mean: 28.3). Most of the patients (73.0%) developed AD between age 18 and 29 years, followed by 30 to 39 years (14.3%), 50 to 59 years (6.3%), 40 to 49 years (4.8%), and 70 to 79 years (1.6%). None of the patients reported early infancy onset with long clearance and subsequent late recurrence in adulthood. The duration of the disease ranged from 6 months to 25 years (mean: 40.9 months).

AD was mild in 49.2% of patients, moderate in 39.7%, and severe in 11.1%.

Body-site distribution of AD is shown in Table I. The main involved sites were flexural areas (88.9%) whereas 11.1% of patients had nonflexural involvement with lesions mainly on trunk and extremities.

Regarding site of onset, a typical flexural (mainly antecubital/popliteal) onset of AD was seen in the majority of cases (n = 37; 58.7%), followed by hands (14.3%), eyelids (12.7%), and other less frequent areas such as trunk (6.3%), neck (3.2%), face (3.2%), and extremity extansors (1.6%). The main reported site of onset was hands in women (17.6%) and eyelids in men (17.2%).

A typical lichenified/exudative pattern was the most frequent morphologic type of dermatitis (71.4%), followed by a mixed type (17.5%) comprising lichenified plus seborrheic dermatitis–like pattern in 7 patients, lichenified plus nummular pattern in 3 patients, and lichenified plus nummular plus seborrheic dematitis–like pattern in one patient.

A total of 7 patients (11.1%) had the following nontypical morphologic variants: 4 patients (6.3%) had nummular pattern alone, whereas two patients (3.2%) had prurigo-like pattern alone, and one patient (1.6%), follicular pattern alone.

A personal and/or family history of atopy was present in 45 patients (71.4%). Mucosal atopic disease was detected in 36 patients (57.1%) with house dust mite antigens as the most relevant allergens (83.3%). Mucosal atopy preceded AD in a majority of cases (54.8%).

Serum total IgE level was high in 57.1% of patients with a range from 167 to 13,424 IU/mL (mean: 786.7 IU/mL).

Patch testing revealed positive results in 7 of 12 those tested with hand lesions, and in one patient with nummular lesions on trunk and extremities. The most frequently diagnosed allergens were nickel (n = 5), alone or in combination with other metals, and chromate (n = 1). Fragrance mix was positive in another patient. All sensitivities had past clinical relevance. The current dermatitis could not be related to contact sensitivities in any patient. No fungal or bacterial infection were detected in nummular lesions.

Regarding the frequency of the diagnostic criteria of Hanifin and Rajka,[7] 50.8% of the patients had 4 major criteria whereas 49.2% had 3 major criteria. As an important finding, 7 patients with 3 major criteria showed a different morphology and/or site of involvement not included in the criteria of Hanifin and Rajka.[7]

The most frequent minor criterium was immediate (type I) skin test reactivity (78.7%). Regarding clinical findings, the most frequent minor feature was itch when sweating (77.8%), followed by intolerance to wool (74.6%), and xerosis (68.3%). The number of positive minor features ranged from 3 to 13 in the whole group (mean = 7). Patients with 6 or fewer minor features had mainly a mild disease whereas patients with more than 6 minor features had moderate to severe AD ($P = .01$; chi-square = 6.4; 95% confidence interval = 1.3-14.2).

Interestingly, 14 patients (22.2%) with the diagnosis of AD according to the criteria of Hanifin and Rajka[7] could not fulfill the UK Working Party's criteria (Table II). These included 7 patients with nontypical morphology and localization of dermatitis, and 7 patients with lack of xerosis and atopic mucosal disease. The frequency of minor criteria of Hanifin and Rajka[7] ranged from 3 to 12 in those 14 patients (mean: 6.8).

Table II. Characteristics of 14 patients with adult-onset atopic dermatitis not covered by the United Kingdom Working Party's criteria

Patient	Sex	Age, y	Age of AD onset, y	Morphology	Localization	Xerosis	Mucosal atopy	AD according to Hanifin and Rajka[7] criteria (major + minor)	AD according to UK Working Party criteria
1	M	20	18	Follicular	Elbow, knee	Yes	Yes	Yes (3 + 7)	No
2	F	20	19	Nummular	Extremity, trunk, hands	Yes	Yes	Yes (3 + 6)	No
3	F	28	28	Nummular	Extremity, foot	Yes	Yes	Yes (3 + 4)	No
4	M	37	33	Nummular	Extremity, trunk	No	Yes	Yes (3 + 5)	No
5	F	32	29	Prurigo-like	Trunk	Yes	Yes	Yes (3 + 9)	No
6	M	29	20	Prurigo-like	Trunk	Yes	Yes	Yes (3 + 9)	No
7	M	31	21	Nummular	Extremity, trunk	Yes	Yes	Yes (3 + 12)	No
8	M	22	22	Lichenified/exudative	Flexural	No	No	Yes (3 + 8)	No
9	F	29	20	Lichenified/exudative	Flexural	No	No	Yes (3 + 3)	No
10	F	63	45	Lichenified/exudative	Flexural	No	No	Yes (4 + 10)	No
11	F	21	20	Lichenified/exudative	Flexural	No	No	Yes (3+ 6)	No
12	M	28	27	Lichenified/exudative	Flexural	No	No	Yes (3 + 9)	No
13	F	36	23	Lichenified/exudative	Flexural	No	No	Yes (3 + 5)	No
14	F	53	46	Lichenified/exudative	Flexural	No	No	Yes (3 + 3)	No

AD, Atopic dermatitis; *F*, female; *M*, male; *UK*, United Kingdom.

DISCUSSION

AD is a common multifactorial disease that is often thought to predominantly afflict infants and children. Reports on adult disease are almost exclusively related to the early-onset AD extending into adult life. However, AD may begin for the first time at an adult age. This subgroup, called adult-onset AD, has been recently mentioned by Bannister and Freeman[1] from Australia. There are few additional reports on patients with adult-onset AD from Japan, Singapore, Malaysia, and Italy.[2-4,11] A change in the climate might be one of the reasons for a delayed onset of AD. Patients born in a humid climate may have subclinical AD as a child that then blossoms into full-blown AD when they move to a drier climate as an adult.

In this study, 16.8% of patients with the diagnosis of AD according to the criteria of Hanifin and Rajka[7] had adult-onset AD, whereas it varied between 13% to 47% in other studies.[1,2,4,11] The rates were higher in two studies performed in patch-test populations, which underlines the importance of recognizing this subgroup of AD, especially in evaluating patients with negative patch tests.[1,2]

Adult-onset AD has a broad range of age of onset. The oldest age at onset was 71 years in this series whereas it was 79 years in another study.[1] The majority of patients developed AD between 20 and 40 years of age in previous reports on adult-onset AD.[1,3,4]

One of the most striking findings of this study was the considerable number of patients (11.1%) with nonflexural involvement (Table II). In a recent study, Ingordo et al[2] reported that in the early-onset group flexural areas were more involved than in adult-onset AD. Diepgen et al[12] also stated that patients with atopy can develop dermatitis without involvement of the flexures.

As in early infancy,[13] the scalp seems to be one of the important sites of involvement in adult-onset AD, as does male preponderance. It is important to distinguish AD of seborrheic areas (scalp/retroauricular region) from seborrheic dermatitis characterized by an early onset, greasy crusts, and absence of pruritus.[14]

Another striking finding was related with the morphology of AD. A typical lichenified/exudative pattern was most frequently seen. However, 7 patients (11.1%) had the nontypical morphologic variants such as nummular, follicular, prurigo-like, and seborrheic dermatitis–like patterns, a finding not reported in previous studies on adult-onset AD. These morphologic variants are well described in the literature, nummular pattern being the most commonly reported type in children and adults.[13,15] Indeed, Oranje and de Waard-van der Spek[13] suggested adding nummular pattern to the clinical signs in young children. Papular, lichenoid, follicular, and seborrheic dermatitis–like patterns are other well-described forms of AD especially in children[5,6,13,15,16] whereas prurigo-like AD is the most frequently reported morphologic variant in adults.[5,16] None of the patients with nontypical morphology and distribution of AD had current relevant contact sensitivities in this series.

In this study, patients with adult-onset AD had a mean number of 7 minor criteria according to Hanifin and Rajka[7] (range: 3-13). The severity of AD

correlated well with the frequency of minor criteria: the less the minor criteria the milder the disease. In accordance to that, Lodén et al[17] showed a positive relationship between the number of minor criteria and the severity of dryness.

The most interesting finding of this study was that UK Working Party's criteria did not cover the same patients as the criteria of Hanifin and Rajka.[7] The criteria of Hanifin and Rajka[7] have been considered as a gold standard for AD diagnosis for the last 20 years.[18] Its simplified version, the UK Working Party's criteria, is more suitable for epidemiologic studies, and has been validated in large investigations with both high sensitivity and specifity.[8,18,19] Apparently, there is no problem in detecting early-onset AD according to these criteria. However, this study showed that approximately one fourth of patients could not be given the diagnosis of adult-onset AD according to UK Working Party's criteria in its current form.

In conclusion, adult-onset AD is an important subgroup of AD with a broad range of age of onset. Although a majority of patients has typical flexural distribution and lichenified/exudative eczematous pattern, a considerable number of patients could have a different morphology (ie, nummular, follicular, prurigo-like, or seborrheic dermatitis–like) and different distribution of AD. Therefore, I would suggest considering these variants of localization and morphology, and older age of onset, while evaluating patients according to the present diagnostic criteria so as not to underdiagnose those with adult-onset AD.

REFERENCES

1. Bannister MJ, Freeman S. Adult-onset atopic dermatitis. Australas J Dermatol 2000;41:225-8.
2. Ingordo V, D'Andria G, D'Andria C. Adult-onset atopic dermatitis in a patch test population. Dermatology 2003;206:197-203.
3. Kawashima T, Kobayashi S, Miyano M, Ohya N, Naruse C, Tokuda Y. Senile type atopic dermatitis. Nippon Hifuka Gakkai Zasshi 1989;99:1095-103.
4. Tay Y-K, Khoo B-P, Goh C-L. The profile of atopic dermatitis in a tertiary dermatology outpatient clinic in Singapore. Int J Dermatol 1999;38:689-92.
5. Herzberg J. Wenig bekannte Formen der Neurodermitis. Hautarzt 1973;24:47-51.
6. Wüthrich B. Die klinischen Manifestationsformen der Neurodermitis atopica im Kindesalter. Hautarzt 1983;34:395-6.
7. Hanifin JM, Rajka G. Diagnostic features of atopic dermatitis. Acta Derm Venereol Suppl (Stockh) 1980;92:44-7.
8. Williams HC, Burney PGJ, Pembroke AC, Hay RJ. The UK Working Party's diagnostic criteria for atopic dermatitis: III, independent hospital validation. Br J Dermatol 1994;131:406-16.
9. Rajka G, Langeland T. Grading of the severity of atopic dermatitis. Acta Derm Venereol Suppl (Stockh) 1989;144:13-4.
10. Akasya-Hillenbrand E, Ozkaya-Bayazit E. Patch test results in 542 patients with suspected contact dermatitis in Turkey. Contact Dermatitis 2002;46:17-23.
11. Jaafar RB, Pettit JHS. Atopic eczema in a multiracial country (Malaysia). Clin Exp Dermatol 1993;18:469-99.
12. Diepgen TL, Sauerbrei W, Fartasch M. Development and validation of diagnostic scores for atopic dermatitis incorporating criteria of data quality and practical usefulness. J Clin Epidemiol 1996;49:1031-8.
13. Oranje AP, de Waard-van der Spek FB. Atopic dermatitis: review 2000 to January 2001. Curr Opin Pediatr 2002;14:410-3.
14. Moises-Alfaro CB, Caceres-Rios HW, Rueda M, et al. Are infantile seborrheic and atopic dermatitis clinical variants of the same disease? Int J Dermatol 2002;41:349-51.
15. Thestrup-Pedersen K. Clinical aspects of atopic dermatitis. Clin Exp Dermatol 2000;25:535-43.
16. Horáková E, Wozniak K-D. Analysis of the occurrence of morphologic changes in atopic dermatitis in childhood [in German]. Z Hautkr 1993;68:155-8.
17. Lodén M, Andersson A-C, Lindberg M. The number of diagnostic features in patients with atopic dermatitis correlates with dryness severity. Acta Derm Venereol (Stockh) 1999;78:387-8.
18. Gu H, Chen XS, Chen K, et al. Evaluation of diagnostic criteria for atopic dermatitis: validity of the criteria of Williams et al in a hospital-based setting. Br J Dermatol 2001;145:428-33.
19. Williams HC, Burney PGJ, Pembroke AC, Hay RJ. Validation of the UK diagnostic criteria for atopic dermatitis in a population setting. Br J Dermatol 1996;135:12-7.