Original Article

Clinical study on atopic dermatitis

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Abstract

Atopic dermatitis (AD) is a genetically determined itchy inflammatory condition characterized by poorly defined erythema with edema, vesicles and weeping in the acute stage and skin thickenings in the chronic stage with a predilection for skin flexures. Atopic dermatitis is the most frequent type of chronic eczema associated with severe pruritus which may lead to constant scratching, producing excoriations and lichenification. There is no single distinguishing feature of AD or a diagnostic laboratory test. Hanifin and Rajka proposed a number of clinical sign and symptoms to define diagnosis of AD. The diagnosis requires the presence of at least three major features and at least three minor features.

This clinical study is intended to find out the most frequent sign and symptom of AD. Fifty patients were elected as AD according to Hanifin and Rajka criteria in out patient department of Dermatology and Venereology of Dhaka Medical College Hospital. Majority of the study subjects (39%) were between 10-19 years and most of them were male (54%). The mean duration of AD was 8.9 (±8.1) years. Regarding occupation 36% were student. Twenty four (24) percent of patient had family history of asthma and 14% had allergic rhinitis. Around 36% cases had personal history of allergic rhinitis and 18% had asthma.

The most frequent symptoms were itch when sweating (56%) followed by intolerance of food (36%) and disease influenced by environmental and emotional factors (22%). Among the signs most common were flexural lichenification (96%) followed by xerosis (76%), cheilitis (52%), ichthyosis/hyperlinear palms (24%), extensor involvement and orbital darkening were 22% each, non-specific hand & foot eczema (18%) and pityriasis alba (16%.)

Key words: Atopic, dermatitis, lichenification, xerosis, cheilitis, ichthyosis

Introduction

Atopic dermatitis is a chronically relapsing, inflammatory, potentially debilitating condition, occurs in persons of all ages but most commonly during early infancy and childhood. It usually occurs in people who have a personal or family history of asthma or seasonal allergic rhinitis and characterized by poorly defined erythema with edema, vesicles and weeping in the acute stage and skin thickening (lichenification) in the chronic stage with a predilection for skin flexures. The prevalence of AD in children is 15 to 30% and 2 to 10% in adults. Sixty five percent of cases of AD present in the first year of life. Between 50 percent and 80 percent of patients with AD develop allergic rhinitis or asthma later in childhood.[1] Although the symptoms of atopic dermatitis resolve by adolescence in 50 percent of affected children, the condition can persist into adulthood. Atopic dermatitis is a genetically transmitted disease with a strong maternal influence. More than one quarter of offspring of atopic mothers develop atopic dermatitis in the first 3 months of life. A person whose identical twin has atopic dermatitis is seven times more likely to have atopic dermatitis than someone in the general population. The pathogenesis of AD is an unidentified genetic abnormality causing increased levels of cyclic adenosine monophosphate (cAMP) phosphodiesterase, which in turn leads to low levels of intracellular cAMP, a secondary messenger controlling cell activity. This causes basophils and mast cells to be hyper reactive, with the end result being increased histamine and leukotriene production.[2,4]

Researchers report a strong association between AD and a common genetic variant, a new locus on chromosome 11, potentially associated with the gene c 11 or f 30.[5] Study suggest mutation in the filaggrin disrupt normal skin barrier that predisposes people to develop atopic dermatitis. The pathogenesis is complex and involves immunological cascade, including disruption of the epidermal barrier, IgE dysregulation, defects in the cutaneous cell mediated immune response, and genetic factors. About 80% of patients with atopic dermatitis have increased amounts of total IgE and tissue-specific inflammation, characterized by the local infiltration of memory T cells, eosinophils, and monocytes/macrophages.[6] IL-4 and IL-13 are thought to be involved in immunoglobulin isotype switching to IgE synthesis and endothelial activation, and IL-5 in the enhancement of eosinophil-mediated responses.7 IL-4 mediated down regulation of IFN(gumma) production and reduced Th-1 activity may explain the decreased sensitivity to topically applied antigens. Increased production of granulocyte macrophage colony stimulating factor in AD is reported to inhibit apoptosis of monocytes, thereby contributing to the persistence of AD. The acetylcholine content of atopic skin is markedly elevated and in subjects with AD, intradermal injection of acetylcholine will produce marked purities, while it produces pain in control patients.

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Atopic dermatitis has increased dramatically with overall improvements in the standard of living and hygiene and AD is more prevalent in developed countries. Stress reduces the itch threshold and increases the transepidermal water loss and often correlates with the flare of atopic dermatitis. Atopic dermatitis usually worsens in the winter and decreased humidity may cause the eczema to become more resistant to treatment. Food, chemicals and aeroallergens may play role in the pathogenesis and exacerbation of AD but the exact roles of aeroallergens and food allergy are controversial. Both in vitro RAST and prick skin test have a nearly 90 percent negative predictive value for AD, but their positive predictive value is less than 50 percent and results are frequently false positive.[8]

Methods

A clinical study was carried out to find out the sign and symptoms of AD. Fifty patients were selected according to Hanifin & Rajka criteria in the outpatient department of Dermatology and Venereology of Dhaka Medical College Hospital, Dhaka. The study was carried out from January 2009 to December 2010. An informed consent was taken from each patient before entry into the study.

Data were collected on pre-designed data sheet. Family history and personal history was taken and patient was asked about exacerbating factors. Then patient were examined clinically. For ethical issue patient suffering from glaucoma, prostatic hypertrophy were excluded from the study.

Results

Majority cases (40%) were between 20 to 29 years, 38% were between10 to 19 years, 10% were in 30 to 39 years and 4% each in rest of the groups. The mean (±SD) age (years) of the patient was 25.28 (±11.45) years (Table-I).

Table-I: Distribution of patients by age

Age (in year)	Frequency	Percentage
10-19	19	38%
20-29	20	40%
30-39	5	10%
40-49	2	4%
50-59	2	4%
≥60	2	4%

There were equal number 25(50%) of male and female. Students were 18 (36%). House wife and service holders were 8(16%) and 7(14%) respectively. Other occupations were garments worker 4(8%), shop Keeper 4(8%), day laborer 3(6%) transport worker and tailors 2 (4%) in each group etc. Among the study subjects, 12 (24%) patients had family history of asthma, 7(14%) patients had family history of allergic rhinitis and another 7(14%) had AD (Table-II).

Table-II: Distribution of patient by family history

Family history	Frequency
Asthma	12 (24%)
Allergic rhinitis	7(14%)
Atopic dermatitis	7(14%)

Nine (18%) patient had personal history of asthma and 18(36%) patient had allergic rhinitis. The most frequent symptoms were itch during sweating 28(56%) followed by intolerance of food 18(36%). The other symptoms were course influenced by environment 11(22%), intolerance of wool 4(8%) and recurrent conjunctivitis 3(6%). The most frequent signs were flexural lichenification 48(96%), followed by xerosis 38(76%), cheilitis 26(52%), ichthyosis/ hyperlinear palms 12(24%), extensor involvement and orbital darkening 11(22%) in each, non specific hand and foot dermatitis 9(18%), pityriasis alba 8(16%) and facial pallor or facial erythema 7(14%) (Table-III).

Table-III: Clinical features in patients of atopic dermatitis

Symptoms	Frequency
Itch when sweating	28 (56%)
Food intolerance	18 (36%)
Course influenced by environment	11(22%)
Intolerance of wool	4(8%)
Recurrent conjunctivitis	3(6%)
Signs	
Flexural lichenification	48(96%)
Xerosis	38(76%)
Cheilitis	26(52%)
Ichthyosis/hyperlinear/palm/ Keratosis Pilaris	12(24%)
Extensor involvement	11(22%)
Orbital darkening	11(22%)
Non -specific hand/foot dermatitis	9(18%)
Pityriasis alba	8(16%)
Facial pallor or facial erythema	
Dennie -Morgan fold	7(14%)
Nipple eczema	3(6%)
Perifollicular accentuation	1(2%)
	1(2%)

Discussion

A total of 50 patient of atopic dermatitis were included in this study according to inclusion and exclusion criteria. The patients were evaluated clinically to find out the most frequent sign and symptoms and SCORAD index were calculated. Subjective symptoms of pruritus and sleeplessness were calculated by using of Visual Analogue Scale (VAS). Majority (40%) of patient were between 20 to 29 years, 38% were between 10 to 19 years, 10% were between 30 to 39 years and 4% each in rest of the groups. Among the patients, 18% were students, 8% were housewives, 7% were service holders and

garment workers, shop keeper were 4% in each. Regarding family history 24% had asthma, 14% had allergic rhinitis and 14% had atopic dermatitis. 18% of patients had personal history of asthma and 36% had allergic rhinitis. These findings are similar to the study done by Williams HC, Wüthrich B.[9]

The most frequent symptoms were itch when sweating (56%) followed by intolerance of food (36%). Among the signs the most frequent were flexural lihenification (96%), followed by xerosis (76%), cheilitis (52%), ichthyosis/hyperlinear palms (24%), extensor involvement (22%), non specific hand and foot dermatitis (18%) and pityriasis alba (16%). These findings are mostly in accordance with the observations of Hanifin JM and Rajka G.[10]

Atopic dermatitis is a chronic condition that compromises the quality of life. There is no single distinguishing feature of AD or a single diagnostic laboratory test. Hanifin and Rajka proposed a number of clinical sign and symptoms to diagnose the AD. This clinical study is intended to find out the most frequent sign and symptom of AD and this will help further in the management of AD.

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