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Original Article

Characteristics and pattern of childhood psoriasis in Saudi Arabia

Abdul Manan Bhutto, Abdul Majeed Al-Ajlan, Sami N. Al-Suwaidan

Department of Dermatology/Psoriasis Research Chair, King Saud University Riyadh, Kingdom of Saudi Arabia.

Abstract

Background Psoriasis is a chronic inflammatory, immunologically mediated disorder in which one-third of patients suffer under the 18 years of age (childhood psoriasis). Although, the exact pathogenesis of the disease is unknown but the clinical information on disease has been the significant value to understand the nature of disease.

Patients and methods In this study, we present our experiences with 36 children having childhood psoriasis who visited the dermatology and phototherapy unit from January 1999 to December 2006. All the cases were diagnosed clinically.

Results Of 36 children, 12 (33.3%) had the generalized (plaque type) psoriasis, 8 (22.2%) had the guttate psoriasis, 4 (11.1%) had the mixed guttate and plaque type; while 6 (16.7%) had the localized lesions on elbows and knees, 4 (11.1%) had the localized lesions on hands and feet and 1 (2.8%) had on scalp. One child (2.8%) had erythematous lesions all over the body since birth (congenital psoriasis). The age of children ranged from 8 months to 18 years (mean=11.27 years). The duration of the disease ranged from 2 months to 11 years (mean=3.04 years). The number of male patients was 15 and the females were 21, hence the male and female ratio was 1:1.4. The family history was positive in 10 (27.8%) children. All patients were treated by giving the various types of topical medications and/or narrow-band ultraviolet B phototherapy treatment.

Conclusion Childhood psoriasis is more common in girls than in boys and plaque type psoriasis is the most common in Arabs. At present, the narrow-band ultraviolet-B phototherapy is safe and effective in moderate and severe cases especially in those children who do not respond to topical protocol treatments.

Key words
Childhood psoriasis, Saudi Arabia, pattern of disease, NB-UVB phototherapy

Introduction

Psoriasis vulgaris is a genetically-determined chronic disease which is seen in 3.5% population in USA[1] and different variations have been reported in various parts of the world. It is mainly divided into two age groups: one, that develops below 18 years called childhood psoriasis and, second, that develops above 18 years and called adulthood psoriasis. Childhood psoriasis is again broadly subclassified in three age groups: infantile psoriasis (onset within first year, and a self-limited disease), psoriasis with early onset, and pediatric psoriasis with psoriatic arthritis,[2] and congenital psoriasis (psoriasis at birth), a distinct entity of psoriasis.[3]

The exact pathogenesis of psoriasis is unknown; however, it is generally agreed that the disease has familial and hereditary involvement, as 23.4% to 71% of children have a family history of psoriasis.[4] A series of genes have been isolated in which mutations

Address for correspondence
Professor Dr. Abdul Manan Bhutto,
Department of Dermatology, Shaheed Muhtarma Benazir Bhutto Medical University, Larkana, Pakistan.
Email: bhutto_manan1@yahoo.com

are associated with psoriatic disease.[5] It is suggested that stress and upper respiratory infections are the most important triggering factors in both childhood and adulthood psoriasis.[6] The proposed trigger factors in generalized pustular psoriasis are medications, bacterial infections, sunburns, pregnancy and the use of coal tar, emotional stress, vaccination, hypocalcaemia, and withdrawal of corticosteroids.[7]

The aim of this study was to present our observations on childhood psoriasis in Saudi patients and characterizing the disease. Scanty data exist on this subject and this study will help to understand the clinical pattern of disease in this region.

Patients and methods

A survey was conducted to analyze the characteristics of children with psoriasis who visited the dermatology and phototherapy unit at King Khalid University Hospital (KKUH) Riyadh, Saudi Arabia. The survey included the age, sex, clinical features, family history and localization of lesions and treatment of childhood psoriasis patients. The KKUH is a teaching hospital which caters to the needs of approximately six million people who are economically sound.

A total of 36 children with childhood psoriasis were seen from January 1999 to December 2006. Most of the patients were diagnosed on the basis of clinical diagnosis; however, the punch biopsies were also taken wherever required and were fixed in 10% formalin for the hematoxylin and eosin staining. In case of guttate psoriasis, throat specimens for culture and blood for ASO titers were also taken.

Results

A total of 36 patients with childhood psoriasis were registered, whose clinical and treatment details are shown in **Table 1**. The age distribution of patients ranged from 8 months to 18 years (mean=11.27 years). The onset of disease ranged from 8 months to 17 years (mean=8.46 years). The duration of disease ranged from 2 months to 11 years (mean=3.04 years), except one child with congenital psoriasis. There were 15 males and 21 females (ratio 1:1.4).

The majority of cases, 12/36 (33.3%) had the generalized plaque type psoriasis, 8/36 (22.2%) had the guttate psoriasis, 4/36 (11.1%) had the mixed type of guttate and chronic plaque type psoriasis; while 6/36 (16.7%) children developed the localized plaque type psoriasis on the elbows and knees, 4/36 (11.1%) had the localized disease on the hands and feet (palmoplantar psoriasis) and 1/36 (2.8%) had scalp psoriasis. One child presented with erythematous lesions on the whole body that he had since birth as described by his parents. He was initially suspected to have congenital psoriasis which was confirmed by histopathological report.

The family history was positive in 10 (27.8%) children. It was observed in first degree relatives in cases 2, 8, 30 and 35; and second degree relatives in cases 3, 10, 17, 26, 29 and 31. Throat cultures and ASO titers were normal in all cases. Twenty four children were treated by the NB-UVB phototherapy for 12 weeks.

The children who had the localized lesions were treated by the topical treatments. Eight of them were treated by topical calcipotriol, while four children were treated with topical corticosteroids. All of them were responded to given treatments.

Discussion

A total of 36 childhood psoriasis children were seen in our department which is a significant

Table 1 Childhood psoriasis patients (n=36).

No.	*Age (years)*	*Sex*	*Duration of disease*	*Site of lesion (type)*	*Family history*	*Mode of treatment*
1	7	f	4y	generalized (plaque type)	negative	NB-UVB
2	7	f	2y	generalized (plaque type)	positive	NB-UVB
3	11	f	2y	guttate type	positive	NB-UVB
4	6	m	1y	mixed guttate and plaque	negative	NB-UVB
5	7	m	2y	generalized (plaque type)	negative	NB-UVB
6	12	f	1y	guttate type	negative	NB-UVB
7	11	f	2y	mixed guttate and plaque	negative	NB-UVB
8	10	f	1.5y	elbows and knees	positive	Calcipotriol
9	9	f	4y	elbows and knees	negative	Calcipotriol
10	10	f	3y	generalized (plaque type)	positive	NB-UVB
11	18	f	1y	hands and feet	negative	Calcipotriol
12	15	f	2y	elbows and knees	negative	Calcipotriol
13	4	m	1.5y	guttate type	negative	NB-UVB
14	0.8	m	since birth	Erythematous	negative	Corticosteroids
15	11	m	6y	hands and feet	negative	Calcipotriol
16	4	m	1y	guttate type	negative	NB-UVB
17	8	f	2y	guttate type	positive	NB-UVB
18	18	f	6y	generalized (plaque type)	negative	NB-UVB
19	17	f	6y	mixed guttate and plaque	negative	NB-UVB
20	12	f	0.3y	generalized (plaque type)	negative	NB-UVB
21	16	f	5y	guttate type	negative	NB-UVB
22	4	f	1y	head	negative	Corticosteroids
23	16	m	8y	generalized (plaque type)	negative	NB-UVB
24	13	m	4y	elbows and knees	negative	Calcipotriol
25	12	m	0.2y	elbows and knees	negative	Calcipotriol
26	14	f	6y	hands and feet	positive	Corticosteroids
27	8	f	4y	generalized (plaque type)	negative	NB-UVB
28	15	f	2y	hands and feet	negative	Corticosteroids
29	9	m	2y	guttate type	positive	NB-UVB
30	14	m	5y	generalized (plaque type)	positive	NB-UVB
31	18	m	11y	generalized (plaque type)	positive	NB-UVB
32	17	f	0.3y	mixed guttate and plaque	negative	NB-UVB
33	6	f	1.5y	generalized (plaque type)	negative	NB-UVB
34	17	m	3y	guttate type	negative	NB-UVB
35	18	m	1.3y	generalized (plaque type)	positive	NB-UVB
36	11	m	1y	elbows and knees	negative	Calcipotriol

number of patients in this Arab region. The duration of disease in our patients was 2 months to 11 years (mean=3.04 years); and the age of onset of disease ranged from 8 months to 17 years (mean=8.46 years). The number of male children was 15 and the female children were 21 (the male female ratio=1:1.4). One child had the erythematous lesions on the whole body since birth (congenital psoriasis), as summarized in **Table 1**. The differences of age of onset of disease between males and females have varied from study to study.[4] In a previous report, it was mentioned that 10% of all their cases developed the disease before the age of 10 years and 2% at less than 2 years of age.[8] Authors observed the onset of disease from 4 days to 14 years in India.[4] The mean age of onset was 8.1±2.1 years in boys and 9.3±2.3 years in girls. The peak age of onset in boys was in the 6-10 years age group, whereas the majority of the girls showed onset of psoriasis between the ages of 10 and 14 years.[9] The mean age of onset of disease in our patients was 8.46 years. In contrast to our

findings, the mean age of onset of disease in 277 childhood psoriatic patients from China was 11 years (median=10 years).[10] The ratio of Chinese female patients was higher than the males (1.13:1) which is similar to our findings where the ratio of our females and males is 1.4:1. On the other hand, when a retrospective study was conducted under 18 years in 61 childhood psoriasis patients in Turkey, no specific difference was detected between males and females. The mean age of their patients: the girls were 9.28±4.02 years and boys were 11.18±3.85years, and the mean age of onset of disease in girls was 6.81±4.11 years and in boys were 7.03±4.28 years. In 14 (23%) cases, a positive family history was detected.[6]

Most of our children 12/36 (33.3%) manifested with plaque type psoriasis in similar patterns to adult patients, with lesions localized to the scalp, post auricular region, elbows, and knees. Similar findings were presented in previous reports[6,9,10] where it was shown that the most frequent clinical type of childhood psoriasis was as a plaque type in 1302 (68.1%) of patients, followed by guttate psoriasis in 727 (38.0%) of patients. Erythrodermic psoriasis and pustular psoriasis were only seen in 7.3% and 5.0% of patients, respectively.[11] These findings are consistent with our findings where we find the guttate psoriasis in 8/36 (22.2%) and mixed guttate and plaque type in 4/36 (11.1%) children as well as localized palmoplantar psoriasis in our 4/36 (11.1%) patients. In most of our guttate psoriasis cases, the throat swab culture was negative and all the generalized plaque psoriasis cases showed a response to NB-UVB phototherapy. Guttate disease is more common in pediatric than adult patients, as seen in 28.9% of 277 children in a Chinese survey. Other patterns in childhood psoriasis include erythrodermic (1.4%), pustular disease including palmoplantar pustular psoriasis (1.1%), and mucosal glossitis (1.1%).[10] Although, in children, the generalized pustular psoriasis is uncommon but may present as a severe and potentially life-threatening disorder. Four clinical patterns of pustular psoriasis have been described in children: generalized pustular psoriasis, annular pustular psoriasis, exanthematic pustular psoriasis, and localized pustular psoriasis. We found 4/36 (11.11%) children with localized psoriasis of hands and feet and only one child 1/36 (2.77%) with congenital psoriasis who had erythrodermic type lesions on the body since birth. In case of congenital psoriasis, the erythrodermic psoriasis stands second after the plaque-type psoriasis, followed by the palmoplantar psoriasis.[12,13,14,15] The rest of our children had localized lesions on the scalp 1/36 (2.8%), hands and feet 4/36 (11.1%), and elbows and knees 6/36 (16.7%).

Although there have been significant advancement in understanding of psoriasis pathophysiology and pathogenesis, the exact cause of psoriasis has not been completely discovered; however, it is reported that psoriasis has a genetic basis, as 23.4% to 71% of children have a family history of psoriasis.[4,6] The family history of our Arab childhood psoriasis patients was positive in 10 (27.78%) patients and was seen in first-degree relatives in 4 cases and second-degree relatives in 6 cases. These findings are similar to above reports. HLA-Cw6 has been known to be a susceptibility gene in psoriasis.[5] No single gene has been found to be responsible for psoriasis vulgaris. A series of genes have been observed having the mutation association with psoriatic disease, they are IL12-B9, Il 13, Il-23R, HLABW6, and so on. These genes play a role in Th2 cell and Th17 cell activity as well as NF-kB signaling, demonstrating both a role for Th2 and Th17 lymphocytes in the pathogenesis of psoriatic disease.

All types of adult psoriasis have been found in children with more or less frequency, so

similar treatment regimens are being tried in childhood psoriasis safely. The use of topical therapy in childhood is the first line of treatment for localized type lesions, but in case of generalized and more severe cases systemic therapy and phototherapy are considered to help the remission. We tried the topical regimen treatment in our localized type of psoriatic patients. Eight patients were treated with calcipotriol ointment and all cleared. Similar findings were reported when a topical calcipotriol was used in 2-14 years age in 43 psoriatic children and it was found more effective than the vehicle control.[16] Topical corticosteroids are recommended for use in children, ages 12 and over.[17,18] Anthralin 1% or dithranol are rarely used in childhood psoriasis because of localized irritation.[19] We treated 4 of our childhood psoriasis patients (including the congenital psoriasis) with corticosteroids, and these patients cleared. Among the other topical agents useful in childhood psoriasis are topical calcineurin inhibitors. Tacrolimus 0.3% ointment and pimecrolimus 1% can be beneficial for pediatric psoriasis, particularly in sites where atrophy is a risk, such as face, intertriginous areas, and groin. These agents are not recommended for under 2 years by FDA.[20]

Systemic treatment is the ultimate option in severe and uncontrolled psoriasis. We didn`t use the systemic treatment in any of our patients.

Phototherapy is considered safe and effective treatment for children especially the younger patients who are able to follow the protocol of phototherapy. NB-UVB phototherapy has been widely recommended in the UV-responsive skin disorders in adults[21] as well as childhood psoriasis.[20] Comparative studies have shown that NB-UVB and PUVA are equally effective.[22,23] But, in comparison with PUVA, NB-UVB does not require psoralens, it is also cheaper and due to unremarkable side effects it can be used in children and pregnancy.

All the 24 cases having generalized plaque type and guttate psoriasis were treated with NB-UVB phototherapy and all responded well. Similar promising results after the treatment with NB-UVB are reported in previous multiple studies. When children were treated for 12 week with NB-UVB treatment, PASI 90 was achieved in 60% of patients, however, 10% had less than 50% improvement.[20] A series of 113 children were treated by various phototherapy procedures. It was observed that 92.9% of psoriatic patients treated by NB-UVB showed positive response by given treatments.[24] These findings are consistent with our results of NB-UVB. In another study, marked improvement was found in 88% of the 25 patients treated.[25] Furthermore, when the 35 cases were treated with NB-UVB, the clearance of disease was found in 63% of cases.[26] Only few cases were reported to develop erythema and anxiety during phototherapy, otherwise, it was being well tolerated.[27] Despite the availability of novel treatments for psoriasis it was concluded in one study that complete clearing of psoriasis is not a realistic expectation of psoriasis treatment.[28]

We conclude that childhood psoriasis is common and plaque type psoriasis is the most common type existing in our region. Although, at present, the NB-UVB phototherapy gave us the most satisfactory results in our cases, new emerging therapies as biologics might prove promising therapeutic tools in the future. Furthermore, at present we could not investigate the triggering factor/s of the disease in our patients which will be performed in future studies.

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