

Pattern of dermatoses in Iraqi children

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أنماط الاعتلالات الجلدية لدى الأطفال في العراق

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الخلاصة: لوحظَ ازدياد معدل انتشار الاعتلالات الجلدية في أطفال العراق من 33.5% في عام 1987 إلى 40.9% في عام 2010. وقد هدفت هذه الدراسة إلى توثيق أنماط الاعتلالات الجلدية لدى الأطفال العراقيين الذين يراجعون العيادات الخارجية في أحد المستشفيات التعليمية في بغداد، العراق. فأجرى الباحثان دراسة مستعرضة شملت ست مئة وثلاثة وثلاثين طفلاً دون سن الثانية عشرة ممن كانوا يراجعون لطلب المشورة الجلدية في غضون عام 2008. وقد أظهرت الدراسة أن أكثر الاعتلالات الجلدية انتشاراً هي: العدوى (32.3%)، فالإكزيمة (20.8%)، فالاعتلالات التصبغية (17.8%)، فالاعتلالات الحطاطية الوَسْفِيَّة (14.2%)، فالاعتلالات المحرّضة بالأدوية (4.5%)، فالعَوَزُ الغذائي (1.8%)، ثم بعض الأمراض المتفرّقة (8.6%). ويتبيّن من الدراسة أن أنماط الاعتلالات الجلدية التي أظهرتها هي مماثلة لتلك التي سجّلتها التقارير الصادرة من بلدان نامية أخرى.

ABSTRACT The prevalence of paediatric dermatoses has risen in Iraq from 33.5% in 1987 to 40.9% in 2010. The objective of this study was to document the pattern of dermatoses in Iraqi children attending the outpatient clinic of a teaching hospital in Baghdad, Iraq. We conducted a cross-sectional study of 663 children under the age of 12 years who attended for dermatological consultation during 2008. The study showed that the prevailing dermatoses were as follow: infectious (32.3%), eczematous (20.8%), pigmentary (17.8%), papulosquamous (14.2%), drug-induced (4.5%), nutritional deficiency (1.8%) and miscellaneous (8.6%). The studied patterns of dermatoses were similar to that reported in other developing countries.

Caractéristiques des dermatoses chez des enfants irakiens

RÉSUMÉ La prévalence des dermatoses pédiatriques en Iraq est passée de 33,5 % en 1987 à 40,9 % en 2010. La présente étude visait à documenter les caractéristiques des dermatoses chez des enfants irakiens fréquentant un centre de consultation externe d'un hôpital universitaire à Bagdad (Iraq). Nous avons mené une étude transversale auprès de 663 enfants de moins de 12 ans soignés en consultation dermatologique en 2008. L'étude a révélé que les dermatoses prévalentes étaient les suivantes : dermatoses infectieuses (32,3 %), eczémateuses (20,8 %), pigmentaires (17,8 %), papulosquameuses (14,2 %), médicamenteuses (4,5 %), nutritionnelles dues à des carences (1,8 %) et dermatoses d'autres origines (8,6 %). Les caractéristiques des dermatoses étudiées étaient similaires à celles notifiées dans d'autres pays en développement.

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Introduction

Dermatoses represent an important public health burden, particularly in developing countries, where high prevalence figures (21%–87%) have been reported [1]. Children present a higher prevalence rate than adults for pyoderma (especially under 5 years of age), certain mycoses (*tinea capitis*) and, to a lesser extent, scabies. Skin disorders represent one of the main organ-specific reasons for visiting a primary health care centre. Despite the relative paucity of objective data and some methodological restrictions, the main etiological factors in developing countries are factors such as hot and humid climate, low hygiene and poor access to water, high interpersonal contact and household overcrowding and reactions to insect bites and scabies [1]. Apart from the financial burden on families to treat skin diseases in their children [2], late diagnosis and/or poor treatment of certain paediatric dermatoses have a significant impact on sleep pattern, growth potential and quality of life of children and their parents [3].

In Iraq, the prevalence paediatric dermatoses has risen from 33.5% in 1987 [4] to 40.9% in 2010 [5]. This could be attributed to a decline in the socioeconomic conditions of most Iraqi people and a general deterioration in services which followed the 1991 Gulf War, economic sanctions and the invasion of Iraq by Allied Forces in 2003, with the accompanying internal conflict. A great deal of research has been conducted on dermatoses in Iraq. However, data about dermatoses among children are lacking. The aim of this study was to identify the pattern of dermatoses in Iraqi children, with the hope that the data will be useful for practising paediatricians and dermatologists.

Methods

A cross-sectional study was carried out on 663 children under the age of 12

years with various dermatoses who attended the dermatological consultation outpatient clinic at Al-Kindy teaching hospital in Baghdad between 1 July to 31 December 2008. Patients with known chronic dermatoses who came for regular follow-up were excluded from the study to avoid repeat data.

Diagnoses were made after history taking and clinical examination. The diagnostic criteria listed in *Nelson textbook of paediatrics* were considered in the clinical diagnosis of the studied dermatoses [6]. Certain laboratory investigations such as direct microscopic examination of skin scrapings with 10% potassium hydroxide for fungi, fluorescence under wood-light lamp, direct microscopic examination of skin scrapings for scabies, complete blood count, differential white blood cell count and erythrocyte sedimentation rate were performed whenever necessary to confirm diagnosis.

The collected data were analysed and frequencies and percentages tabulated according to diagnosis.

Results

Of 663 children included over the 6-month period, 374 (56.4%) were males and 289 (43.6%) were females. The male to female ratio was 1:0.77. Their age ranged from 1 month to 12 years with a mean age of 5.8 (standard deviation 3.9) years.

Table 1 shows the distribution of various dermatoses by age and sex of the studied patients.

Infectious dermatoses were the preponderant type of dermatosis (214 cases, 32.3%). Among them, fungal were the most common infections (13.3%), followed by parasitic (9.8%), viral (5.1%) and bacterial (4.1%). *Tinea* (5.9%), *pityriasis versicolor* (3.8%) and *candidiasis* (3.6%) were the commonly encountered fungal dermatoses. Parasitic dermatoses constituted (9.8%) of total infectious dermatoses, notably *scabies* (4.2%),

pediculosis (3.6%), and cutaneous leishmaniasis (2.0%). Viral dermatoses formed 5.1% of the total and included warts (2.1%), *molluscum contagiosum* (1.5%), herpetic stomatitis (1.2%) and chickenpox (0.3%). Bacterial dermatoses represented the least (4.1%) and included *impetigo* (2.3%), *boil* (1.2%) and *cellulitis* (2.7%).

Eczematous dermatoses were the second most common category (145 cases, 21.9%). Atopic dermatitis was the preponderant type (14.5%). Most patients with atopic dermatitis were below 8 years of age with the peak incidence in the 0–3 year age group. Facial and flexural involvements were mainly observed in the studied patients. Other less common eczematous dermatoses were contact dermatitis (4.7%), *seborrhoeic dermatitis* (2.7%) and *pityriasis alba* (1.1%).

Pigmentary disorders were the third ranking dermatosis (118 cases, 17.8%) with *vitiligo* being the most common, in 8.3% of patients. The mean age of patients with *vitiligo* was 5.9 (SD 1.8) years. Segmental, acrofacial and halo nevi were the commonest presentation. The most frequent site of involvement was the head (58.2%) followed by the trunk (29.1%) and limbs (9.1%). Other less common pigmentary dermatoses included post-inflammatory hypopigmentation (5.6%) and postinflammatory hyperpigmentation (3.9%).

Papulosquamous dermatoses were the fourth ranked type (94 cases, 14.2%). Among them, *psoriasis* was the most common (5.3%). The mean age of patients with *psoriasis* was 7.3 (SD 2.5) years. The scalp were the most common initial site affected (28.6%) followed by flexures of legs (17.1%). Classical plaque *psoriasis* was the most frequent clinical presentation (62.8%) followed by guttate *psoriasis* (14.3%). Nail involvement was seen in 22.8% of patients in the form of pitting, ridging and discolouration. Other papulosquamous dermatoses involved *lichen planus* (3.9%), *pityriasis rosea* (2.9%), and *pityriasis rubra pilaris* (2.1%).

Table 1 Distribution of various dermatoses by age and sex of the studied patients (n = 633)

Type of dermatosis	1-3 years			4-7 years			8-12 years			All ages			
	M No.	F No.	Total %	M No.	F No.	Total %	M No.	F No.	Total %	M No.	F No.	Total %	
Infectious (32.3%)													
Fungal													
Tinea: pedis, capitis, corporis, unguium	6	4	10	2	10	12	1.8	7	10	17	2.6	39	5.9
Pityriasis versicolor	4	4	8	8	4	12	1.8	5	0	5	0.8	25	3.8
Candidiasis	3	6	9	2	2	4	0.6	6	5	11	1.7	24	3.6
Total	13	14	27	12	16	28	4.2	18	15	33	5.1	88	13.3
Parasitic													
Scabies	10	0	10	2	4	6	0.9	6	6	12	1.8	28	4.2
Pediculosis	5	6	11	9	0	9	1.3	0	4	4	0.6	24	3.6
Cutaneous leishmaniasis	0	2	2	4	2	6	0.9	5	0	5	0.8	13	2.0
Total	15	8	23	15	6	21	1.3	11	10	21	3.2	65	9.8
Viral													
Warts	0	6	6	2	2	4	0.6	0	4	4	0.6	14	2.1
Molluscum contagiosum	2	2	4	1	5	6	0.9	0	0	0	-	10	1.5
Herpetic stomatitis	0	0	0	6	0	6	0.9	2	0	2	0.3	8	1.2
Chickenpox	2	0	2	0	0	0	-	0	0	0	-	2	0.3
Total	4	8	12	9	7	16	2.4	2	4	6	0.9	34	5.1
Bacterial													
Impetigo	0	1	1	2	5	7	1.1	0	7	7	1.1	15	2.3
Boil	2	0	2	4	2	6	0.9	0	0	0	-	8	1.2
Cellulitis	0	0	0	0	0	0	-	4	0	4	0.6	4	0.6
Total	2	1	3	6	7	13	2.0	4	7	11	1.7	27	4.1
Eczematous (21.9%)													
Atopic dermatitis	20	14	34	16	11	27	4.1	10	18	28	4.2	89	13.4
Contact dermatitis	0	7	7	10	8	18	2.7	1	5	6	0.9	31	4.7
Seborrheic dermatitis	5	0	5	1	0	1	0.1	6	6	12	1.8	18	2.7
Pityriasis alba	0	2	2	0	5	5	0.8	0	0	0	-	7	1.1
Total	25	23	48	27	24	51	7.7	17	29	46	6.9	145	21.9

Table 1 Distribution of various dermatoses by age and sex of the studied patients (n = 633) (concluded)

Type of dermatosis	1-3 years			4-7 years			8-12 years			All ages		
	M No.	F No.	Total %	M No.	F No.	Total %	M No.	F No.	Total %	M No.	F No.	Total %
Pigmentary (17.8%)												
Vitiligo	0	3	3 0.4	10	12	22 3.3	15	15	30 4.6	55	55	8.3
Post-inflammatory hypopigmentation	7	4	11 1.7	10	10	20 3.0	6	0	6 0.9	37	37	5.6
Post-inflammatory hyperpigmentation	1	5	6 0.9	6	6	12 1.8	8	0	8 1.2	26	26	3.9
Total	8	12	20 3.0	26	28	54 8.1	29	15	44 6.7	118	118	17.8
Papulosquamous (14.2%)												
Psoriasis	5	0	5 0.8	7	3	10 1.5	10	10	20 3.0	35	35	5.3
Lichen planus	3	0	3 0.4	2	10	12 1.8	6	5	11 1.7	26	26	3.9
Pityriasis rosea	2	2	4 0.6	6	4	10 1.5	0	5	5 0.8	19	19	2.9
Pityriasis rubra pilaris	0	0	-	4	0	4 0.6	6	4	10 1.5	14	14	2.1
Total	10	2	12 1.8	19	17	36 5.4	22	24	46 7.0	94	94	14.2
Drug-induced (4.5%)												
Total	5	2	7 1.1	10	3	13 1.9	7	3	10 1.5	30	30	4.5
Nutritional deficiency (1.8%)												
Hair involvement (Flag sign, easily pluckable, sparse and depigmented hair)	6	2	8 1.2	0	0	0 -	0	0	0 -	8	8	1.2
Skin involvement (flaky and hypopigmented skin)	4	0	4 0.6	0	0	0 -	0	0	0 -	4	4	0.6
Total	10	2	12 1.8	0	0	0 -	0	0	0 -	12	12	1.8

M = males; F = females.

Drug-induced dermatoses ranked fifth (30 cases, 4.5%). Penicillin derivatives, trimethoprim–sulfamethoxazole, cephalexin, erythromycin, and sodium valproate were the preponderant drugs causing adverse skin reactions. Their adverse skin effects varied from simple maculopapular rash to bullous lesions.

Nutritional deficiency disorders were the least common dermatoses. They were noticed in only 12 (1.8%) children: 8 (1.2%) marasmic children and 4 (0.6%) with kwashiorkor.

A diverse group of unclassified dermatoses were categorized in a miscellaneous group (57 cases, 8.6%). This included ulcer, trichotillomania, purpura, insect bite, alopecia areata, haemangioma, urticaria, keloid, miliaria and nevi.

No sex- or age-specific differences in dermatoses was recorded among the studied cases, except for a predominance of cases of nutritional deficiency-induced dermatoses in the age group 1–3 years, particularly infants.

Discussion

A significant percentage of the workload of general practitioners is dermatological [7]. It is necessary to know the epidemiological background of common skin diseases. Such study is important for improvement of treatment facilities as well as pharmaceutical industries and health planning [8].

The present study showed that infectious dermatoses were the predominant category (32.3%), with a majority of cases being fungal infections (13.3%). The common dermatophyte genera *Trichophyton*, *Microsporium*, and *Epidermophyton* are major causes of superficial fungal infections in children. These infections are typically acquired directly from contact with infected or human or animals or indirectly from exposure to contaminated soil or fomites [9]. Poor hygienic and sanitary conditions and lack of awareness and health services for the skin diseases probably contributed

to the high prevalence of infectious dermatoses.

Ecematous dermatoses were diagnosed in 21.9% of patients. Atopic dermatitis was the predominant type (14.5%). This is the most common chronic inflammatory skin disease of childhood and is increasing in prevalence throughout the world. Visits of children with atopic dermatitis to office-based physicians and hospital outpatient departments are increasing too [10]. Most patients with atopic dermatitis were below 8 years of age with the peak incidence in 0–3 year age group.

Pigmentary dermatoses were detected in 17.8% of patients. Vitiligo, post-inflammatory hypopigmentation, and post-inflammatory hyperpigmentation were seen in 8.3%, 5.6% and 3.9% of patients respectively.

Papulosquamous dermatoses were noticed in 14.2% of patients. Among them, psoriasis was the most common (5.3%), followed by lichen planus (3.9%), pityriasis rosea (2.9%), and pityriasis rubra pilaris (2.1%).

It is well-known that various medicines are associated with adverse skin reactions [11]. The low prevalence of drug-induced dermatoses (4.5%) noted in the present study might be attributed to the relative shortage of drugs in health care centres and hospitals on the one hand and the expense of obtaining them from private pharmacies on the other hand. The main offending drugs noted in the study were penicillin derivatives, trimethoprim–sulfamethoxazole, cephalexin erythromycin and sodium valproate.

Nutritional disorders are often associated with various dermatoses [12]. Although malnutrition has been reported in nearly 28% of Iraqi children [13], the reported prevalence of nutritional deficiency dermatoses in the present study was small (1.8%), namely marasmus (1.2%) and kwashiorkor (0.6%). This might be explained by parents worried about growth failure in malnourished

children seeking nutritional rehabilitation in hospitals rather than dermatological consultation for skin lesions.

Various studies have shown important sex- and age-specific differences in paediatric predisposition and diagnosis of dermatoses. For example, a preponderance among girls has been noted for psoriasis [14], pityriasis rosea [15], pediculosis capitis [16], and lichen planus [17]. On the other hand, pediculosis capitis was found to be predominant in the age group 8–12 years [18], cutaneous tuberculosis in 10–14 years [19] and tinea capitis in 5–15 years [20]. However, the current study revealed no sex- or age-specific differences in the studied dermatoses except for a preponderance of cases of nutritional deficiency-induced dermatoses in the age group 1–3 years, particularly infants. This generally seems consistent with data reported previously [5,21].

It is noteworthy that Iraqi children have suffered physically, nutritionally and psychosocially by the consequences of the antecedent conflicts in Iraq [22]. Stressful life events are known to play an important role in the onset and aggravation of various dermatoses, namely psoriasis, vitiligo, alopecia areata, lichen planus, atopic dermatitis [23–26]. In addition, the Iraqi health care system is still crippled by the conflicts in the country [27], which hinder the treatment of many health problems including dermatological ones.

In comparison with other studies, our data resembled to some extent that reported in developing countries. In an Ethiopian study [28], allergic skin diseases were most frequently found (55%), followed by infections (33%), and photodermatitis (8%). Of the allergic skin diseases, atopic dermatitis was the most prevalent (47%), followed by seborrhoeic dermatitis (17.4%). In an Egyptian study [29], parasitic skin infestations had the highest prevalence rate (27.4%), of which pediculosis capitis (19.4%) was the commonest. Eczema/dermatitis had a prevalence

of 19.8%, with pityriasis alba forming the majority (13.5%). Pigmentary disorders were 17.7%, followed by fungal skin infections (16.2%), then naevoid disorders (16.1%), hair and scalp disorders (12.07%), bacterial skin infections (10.1%), sweat gland disorders (6.2%) and acne vulgaris (5.4%). In another Indian study [30], infections and infestations were the most common dermatoses (54.5%) followed by dermatitis and eczema (8.6%), pigmentary disorders (5.7%), insect bite reaction (5.3%) and hair and nail disorders (5.2%). Pyoderma (47.13%) and scabies (30.6%) were the most common dermatoses due to infections and infestations. In a Yemeni study [31], the leading group of diseases was dermatitis and eczematous disorders, followed by infections and infestations (including cutaneous leishmaniasis and mycetozoa), and acne and acneiform disorders. In a Nigerian study [32], infectious and parasitic diseases accounted for 44.4%

of cases, eczema, acne, papulosquamous, and pigmentary skin disorders were observed in 14.1%, 7.0%, 64%, and 6.0% of cases respectively. In a study in Pakistan [33], infectious skin diseases were the commonest (60%). Among the infections, fungal were maximum (20.6%), followed by bacterial diseases (12%). Eczemas constituted 21% of skin diseases and 6.4% children had congenital skin conditions. The relative similarity between the pattern of data in our study and those reported in the aforementioned developing countries might suggest a cumulative effect of various socioeconomic, nutritional and environmental factors [34].

The current study had some limitations. First, the collected data represented a cross-sectional study on paediatric dermatoses in a single dermatological clinic and was not representative of the whole country. Secondly the study would be more informative if a comparison were made with similar

data published before. However, no nationwide studies on the whole pattern of paediatric dermatoses exist. Despite these limitations, the study can be regarded as a preliminary one and a step towards further elucidation of the issue in future studies.

In conclusion, paediatricians and dermatologists in Iraq need be aware about these prevailing dermatoses and be able to handle them properly. Epidemiological research to identify risk factors for different types of dermatoses is needed in order to plan for effective preventive measures to improve the health status of these children.

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Correction

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