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Emergency consultations to pediatric dermatology at a large children's hospital in Saudi Arabia

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Abstract

Dermatology is commonly considered a non-urgent and outpatient-centered specialty. Limited studies have evaluated skin diseases presenting to the pediatric emergency department. This study aims to characterize the most common pediatric dermatological conditions prompting an emergency department visit between August 2018 and August 2023 in a large children's hospital in Riyadh, Saudi Arabia. A total of 183 patients were included. The majority of patients were 2 years old and younger [87 (47.5%)]. Gender was almost equally distributed, with 51.4% of the population being females. Infectious and inflammatory disorders were the most commonly encountered conditions, accounting for 35.5% and 33.9%, respectively. The top three diagnoses were atopic dermatitis (12.02%), impetigo (6.56%), and infantile hemangioma (6.01%). Understanding the variety of skin disorders presented to pediatric emergency departments can

positively enhance patient care in dermatology clinics and promote preventative public health initiatives, thus minimizing emergency department visits.

Introduction

Dermatology is commonly considered a non-urgent and outpatient-centered specialty.[1] However, in a few published studies, dermatological complaints encountered in a Pediatric Emergency Department (PED) accounted for 4% to 40% of all emergency cases.[2-7] Despite those high percentages, only a few international studies have been conducted to analyze these dermatoses. Reported dermatological conditions seen in PED include a wide range of diseases, such as infections, adverse drug reactions, and several inflammatory conditions.[8-9] Knowledge about such conditions might help improve emergency patient care by local authorities. To our knowledge, no similar studies were conducted to describe dermatoses in children presenting to the emergency department in Saudi Arabia. Our study aims to characterize the most common pediatric dermatological conditions prompting an emergency department visit in a large children's hospital in Riyadh, Saudi Arabia.

Materials and Methods

A retrospective study evaluated emergency consultations from PED to dermatology at King Abdullah Specialized Children's Hospital (KASCH) between August 2018 and August 2023. All patients with skin conditions for which the dermatology service was contacted by PED were included. Only patients who are ≤14 years old are seen at our children's hospital.

Data were collected from the electronic medical records. Included variables were age, gender, and diagnosis. SPSS (version 23) was used for analysis. Categorical variables were presented as

counts and percentages. Numerical variables were described as mean/standard deviation or median/interquartile range as appropriate.

Results

The study included a total of 183 patients. Patient characteristics are described in Table 1. The mean age was 4.58 ± 4.27 years old. The majority were 2 years old and younger [87 (47.5%)]. Gender distribution was similar, with 51.4% females.

Infectious and inflammatory disorders were the most common (35.5% and 33.9%, respectively) (Figure 1). Table 2 shows the specific diagnoses of all cases. The most common diagnoses were atopic dermatitis (12.02%), impetigo (6.56%), infantile hemangioma (6.01%), seborrheic dermatitis (4.37%), eczema herpeticum (3.83%), tinea capitis (3.83%), viral exanthem (3.83%), eczema (3.83%), and insect bite reaction (3.83%). Impetigo, viral exanthem, infantile hemangioma, and contact dermatitis were more common in females (Table 3). Males were more likely to have insect bites, atopic dermatitis, and seborrheic dermatitis. Table 4 shows age in relation to different diagnoses.

Discussion

Despite the high rate of dermatological presentations to the pediatric emergency department, studies on this topic in children seem to be limited.[2-5] The variable prevalence of skin conditions in different studies can be explained by variable cutaneous presentations in different countries.[10] This highlights the importance of having specific data for each country. In Saudi Arabia, there are limited data on this topic. Our study will hopefully fill this gap as there are no similar local studies to the best of our knowledge.

Most of the cases in our study were due to infectious and inflammatory conditions. These findings were consistent with a study from Switzerland.[2] Inflammatory and infectious skin diseases were the most frequently encountered in the PED, accounting for 42.9% and 31.8%, respectively.[2] Similarly, Kramkimel et al. showed that infections (42%) and inflammatory causes (23.2%) were the most prevalent in patients presenting to the PED with skin complaints.[3]

In the present work, the three most observed dermatological diagnoses were atopic dermatitis, impetigo, and infantile hemangioma. These findings differ from those of Landolt B et al., where viral exanthem and anogenital dermatitis were the most common.[2] Impetigo was among the most common diagnoses in a French study, along with urticaria, viral exanthem, varicella, and insect bites.[3] Furthermore, a study done in Thailand has observed that urticaria, unspecified infectious exanthem, and unspecified dermatitis (non-atopic dermatitis) were the most commonly established diagnoses in a PED setting.[11] This variation in the specific diagnoses established in a PED setting further affirms the theory that each country has its own variability of cutaneous presentations among the pediatric age group.

Females presented with more cases of impetigo, viral exanthem, infantile hemangioma, and contact dermatitis than males. The higher prevalence of infantile hemangioma in females is consistent with the known general female predominance in infantile hemangioma. Interestingly, contact dermatitis was seen mainly in females. This can be explained by the cultural use of henna for girls during special occasions. On the other hand, insect bites, atopic dermatitis, and seborrheic dermatitis were shown to be more common in males. Males are more likely to play outdoors and get exposed to insects. The severity of atopic dermatitis and less adherence to therapy might explain more PED visits in males. Age-related findings in our study shared similarities with the ones by Landolt B et al. For example, in their study, they found viral

exanthems to be more common in those younger than 6 years old, while insect bites occurred more in patients older than 6 years old.[2] Similarly, we found the mean age of patients with viral exanthem and insect bites to be 4.51 and 6.43 years, respectively.

The retrospective design of our study is a limitation that might affect the accuracy of the final diagnoses. We also did not calculate the overall prevalence of skin complaints as compared to all PED visits. A larger sample size would have further strengthened our results; however, this was limited by the single-center nature of the study. This would be improved by future multicenter studies over longer periods of time.

Conclusions

We described a wide range of skin conditions that presented to the PED in a large children's hospital in Saudi Arabia. Knowledge about such conditions might help improve patient care in dermatology clinics and overall preventative public health strategies to minimize emergency visits. Additional studies on a larger scale might help provide more building blocks to fill this gap.

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Table 1. Patient characteristics (n = 183).

Demographical characteristics	n	%
Age		
2 years and younger	87	47.50
3 - 5 years	31	16.90
6 - 9 years	32	17.50
10 - 14 years	33	18.00
Age		
Minimum	13 days	
Maximum	14 years	
Mean	4.58 years	
Standard deviation	4.27 years	
Gender	n	%
Male	89	48.60
Female	94	51.40

Table 2. Diagnosis of all pediatric dermatology cases seen in the emergency department (n = 183).

Diagnosis	n	%
Infections (n = 65)		
Impetigo	12	6.56
Eczema herpeticum	7	3.83
Tinea capitis	7	3.83
Viral exanthem	7	3.83
Hand Foot Mouth Disease	5	2.73
Molluscum contagiosum	3	1.64
Pityriasis rosea	3	1.64
Staphylococcal scalded skin syndrome	3	1.64
Atopic dermatitis with secondary bacterial infection	4	2.18
Blistering distal dactylitis	2	1.09
Chickenpox	2	1.09
Leishmaniasis	2	1.09
Tinea corporis	2	1.09
Candidal dermatitis	1	0.55
Carbuncle	1	0.55
Disseminated varicella zoster virus	1	0.55
Herpes zoster	1	0.55
Herpes simplex virus	1	0.55
Pediculosis capitis	1	0.55
Scabies	1	0.55
Inflammatory disorders (n = 62)		
Atopic dermatitis	22	12.02
Seborrheic dermatitis	8	4.37
Eczema	7	3.83
Insect bite	7	3.83
Folliculitis	5	2.73
Urticaria	3	1.64
Fuchs syndrome	2	1.09
Psoriasis	2	1.09
Acne vulgaris	1	0.55
Erythroderma	1	0.55
Lichen planus	1	0.55
Lichen sclerosis	1	0.55
Sebopsoriasis	1	0.55
Xerotic eczema	1	0.55
Other dermatoses (n = 14)		
Milliaria rubra	3	1.64
Chronic bullous disease of childhood	2	1.09
Pyogenic granuloma	2	1.09

Acute sunburn	1	0.55
Neonatal pustular melanosis	1	0.55
Nutritional dermatosis	1	0.55
Post inflammatory hyperpigmentation	1	0.55
Prurigo nodularis	1	0.55
Pruritus	1	0.55
Congenital and neonatal skin disorders (n = 13)		
Infantile hemangioma	11	6.01
Aplasia cutis congenita	1	0.55
Port wine stain	1	0.55
Drug reactions (n = 8)		
Morbilliform drug eruption	5	2.73
DRESS syndrome	2	1.09
Stevens-Johnson syndrome	1	0.55
Dermatoses due to exogenous factors (n = 6)		
Contact dermatitis	5	2.73
Pressure induced alopecia	1	0.55
Genetic diseases (n = 5)		
Dystrophic epidermolysis bullosa	2	1.09
Nonbullous congenital ichthyosiform erythroderma	2	1.09
DITRA flare up	1	0.55
Vascular/coagulopathies (n = 4)		
Vasculitis	4	2.19
Autoimmune skin diseases (n = 3)		
Erythema multiforme	2	1.09
Morphea (localized scleroderma)	1	0.55
Unclear diagnoses (n = 3)		
No final diagnosis	3	1.64

Abbreviations: DITRA: deficiency of the interleukin-36 receptor antagonist; DRESS: drug reaction with eosinophilia and systemic symptoms.

Table 3. Gender-based comparison among different diagnoses.

Diagnosis	Gender	
	Male	Female
Category of diagnosis		
Infectious dermatological diseases	29 (44.6%)	36 (55.4%)
Inflammatory disorders	37 (59.7%)	25 (40.3%)
Other dermatoses	6 (42.9%)	8 (57.1%)
Congenital and neonatal skin disorders	3 (23.1%)	10 (76.9%)
Drug reactions	5 (62.5%)	3 (37.5%)
Dermatoses due to exogenous factors	0 (0%)	6 (100%)
Genetic diseases	2 (40%)	3 (60%)
Vascular and coagulopathies	3 (75%)	1 (25%)
Autoimmune skin diseases	1 (33.3%)	2 (66.7%)
Diagnosis		
Infectious dermatological diseases		
Impetigo	4 (33.3%)	8 (66.7%)
Eczema herpeticum	3 (42.9%)	4 (57.1%)
Tinea capitis	4 (57.1%)	3 (42.9%)
Viral exanthem	2 (28.6%)	5 (71.4%)
Hand Foot Mouth Disease	2 (40%)	3 (60%)
Inflammatory disorders		
Atopic dermatitis	14 (63.6%)	8 (36.4%)
Seborrheic dermatitis	5 (62.5%)	3 (37.5%)
Eczema	3 (42.9%)	4 (57.1%)
Insect bite	5 (71.4%)	2 (28.6%)
Folliculitis	2 (40%)	3 (60%)
Congenital and neonatal skin disorders		
Infantile hemangioma	2 (18.2%)	9 (81.8%)
Drug reactions		
Morbilliform drug eruption	3 (60%)	2 (40%)
Dermatoses due to exogenous factors		
Contact dermatitis	0 (0%)	5 (100%)

Table 4. Age-based comparison among different diagnoses.

Diagnosis	Age (in years)			
	Mean	Standard deviation	Median	Interquartile Range
Category of diagnosis				
Autoimmune skin diseases	12.67	1.53	13.00	0.00
Dermatoses due to exogenous factors	6.83	4.96	6.50	10.50
Drug reactions	4.88	2.95	5.50	5.50
Genetic diseases	8.80	1.30	9.00	2.50
Infectious dermatological diseases	4.24	3.98	3.00	6.00
Inflammatory disorders	4.57	4.49	3.00	8.50
Other dermatoses	5.32	3.80	5.00	7.00
Vascular and coagulopathies	5.25	5.85	2.50	9.25
Congenital and neonatal skin disorders	0.47	0.85	0.17	0.25
Diagnosis				
Infectious dermatological diseases				
Eczema herpeticum	1.56	1.37	1.00	2.40
Hand Foot Mouth Disease	2.72	2.57	2.00	4.20
Impetigo	2.97	3.34	1.00	4.67
Tinea capitis	6.71	3.99	7.00	9.00
Viral exanthem	4.51	3.23	5.00	7.00
Inflammatory disorders				
Atopic dermatitis	3.71	4.22	1.50	7.69
Eczema	6.63	4.70	9.00	10.00
Folliculitis	1.52	1.39	1.00	2.71
Insect bite	6.43	5.09	4.00	10.00
Seborrheic dermatitis	0.39	0.66	0.16	0.23
Congenital and neonatal skin disorders				
Infantile hemangioma	0.51	0.89	0.21	0.22
Drug reactions				
Morbilliform drug eruption	4.40	2.41	5.00	4.50
Dermatoses due to exogenous factors				
Contact dermatitis	8.00	4.53	7.00	8.50

Figure 1. Diagnostic categories of all pediatric dermatology cases seen in the emergency department (n = 183)