



ISSN: 2520-5234

Available online at <http://www.sjomr.org>

SCIENTIFIC JOURNAL
OF MEDICAL RESEARCH

Vol. 5, Issue 19, pp 67-72, 2021



ORIGINAL ARTICLE

The Prevalence of Skin Diseases among Iraqi Infants

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ARTICLE INFORMATION

Article history:

Received: 06 April 2020

Revised: 24 May 2021

Accepted: 09 June 2021

Published: 24 September 2021

Keywords:

Dermatology,
Infants,
Neonates,
Prevalence,
Skin diseases.

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ABSTRACT

Background: Skin diseases are common among infants. There are few studies done about the frequency of skin diseases among infants and mostly consist of a limited number of patients.

Aim of the Study: this study was conducted to shed light on the frequency and different aspects of skin diseases among infants.

Patients and Methods: a total of seven hundred and fifty-five infants and neonates were seen randomly in the outpatient clinic department of dermatology and venereology in Baghdad teaching hospital and in the outpatient clinic department in Al-Mansour pediatric hospital in the period from august 2004 to august 2005. the full dermatological examination was performed for every infant, and investigations were done when necessary to reach a complete diagnosis.

Results: Seven hundred and fifty-five infants and neonates were included in this study, 50.5% were males, and 49.5% were females; 87 of them were neonates. Various skin diseases have been diagnosed in both neonates and infants. The most common five diseases in neonates were napkin candidiasis (11.5%), followed by umbilical granuloma (9.2%), napkin dermatitis (8.04%), skinfold candidiasis (8.04%), and seborrheic dermatitis (5.7%). Regarding infants, atopic dermatitis appeared to be the most common disease (23.4%), followed by napkin candidiasis (7.8%), seborrheic dermatitis (7.2%), napkin dermatitis (6.9%), and impetigo (5.5%). Other various skin diseases which can affect infants have been encountered.

Conclusion: Skin diseases are common among Iraqi infants; the most common one was atopic dermatitis which constituted about one-fourth of total consultations in the outpatients clinic. Other common skin diseases were napkin rash and skin infections. In general, these findings are similar to those of developed and western countries.

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CITATION: Al-Hasani F, AL-Hamam H, Farhood IG, Tareq A. "The Prevalence of skin diseases among Iraqi infants". Sci. J. Med. Res. 2021;5(19):67-72.

INTRODUCTION

Skin diseases are common in infants. Some are transient and require only a single or few visits to the dermatologists, whereas others are chronic and recurrent and thus require more frequent follow-up.¹ Despite the high frequency of certain skin diseases in developing countries, they have not been regarded as a significant health problem in developing public health strategies in Iraq. Some skin disorders are exclusive to childhood, while others are found across all age groups but may differ in manifestation and treatment.² An epidemiological survey of skin diseases in Iraqi children and infants was performed in 1989 in an outpatient setting by Sharquie and AL-Khafaji,³ however, no further studies have been conducted since that time. The pattern of skin disease shows seasonal variations and varies from one country to another and even within different geographical regions of the same country.⁴ *Aim of the study:* this study was conducted to shed light on the frequency and different aspects of skin diseases among infants. We also aimed to compare the findings with other studies from the literature among different racial and ethnic groups.

PATIENTS AND METHODS

A total of seven hundred and fifty-five infants and neonates were seen in the outpatient clinic Department of Dermatology and Venereology, and in the Outpatient Clinic – Department of Pediatrics in The Medical Teaching Hospital in the period between August 2004–August 2005. Full history was taken for all infants, including the name, age, sex, complaint, disease onset, duration, past history of drug ingestion, other skin or systemic diseases, type of feeding, and vaccination. Maternal history also was taken including the history of skin disease or other diseases, gestational age, type of delivery, consanguinity. In addition, paternal history of skin diseases or other diseases had also been taken. The full dermatological examination was done regarding clinical examination, including hair, nail, mucous membranes, and lymph nodes. Side room examination including Woods lamp, diascopy was done also. Simple laboratory tests such as scraping for superficial fungal

infection. Lastly, a skin biopsy was carried out when necessary to reach a full diagnosis. Before the interview, verbal consent was taken from each patient, after a brief explanation of the study and its objectives.

RESULTS

This study included seven hundred and fifty-five infants and neonates were included in this study, 381 (50.46%) were males, and 374 (49.53%) were females. M: F ratio was 1.01:1 (Table 1). The mean age in neonates was 19.30 + 8.46 days, while in infants was 7.05 + 7.95 months. Regarding neonates, napkin candidiasis was the major problem with 19 patients (11.5%), followed by umbilical granuloma with eight patients (9.2%). Napkin dermatitis and candidiasis of skin fold with seven patients (8%), for each of them (Table 2). In infants, atopic dermatitis was the most common problem in 156 patients (23.4%), followed by napkin candidiasis with 52 patients (7.8%), and then seborrheic dermatitis in 48 patients (7.2%) (Table 2). Diseases in which more than 10 patients were recorded are presented in Table 3. Diseases classified under specific groups for both infants and neonates are presented in (Tables 4 and 5) respectively. Table 6 shows the most common skin diseases that affect infants and their relation to the type of feeding.

DISCUSSION

The present study was designed to shed light on skin diseases' frequency and different aspects among outpatient infants and neonates. In infants, the most common disease recorded in this study was AD which constituted 23% of all outpatients' consultations, followed by Napkin candidiasis 8%, SD 7%, IDD 7%, while impetigo affected 5.5% of the total number of cases. These results are different from that of Sharquie and Al-Khafaji (Table 7); in their study, the number one disease was infection and infestation, which affected 30% of infants, Eczema, and dermatitis affected 7.6% of their patients.³ Another Iraqi study performed in 1983 showed that AD affected 27% of Iraqi infants;¹ this is comparable to our results. In another study carried out in Kuwait by Nanda in 1999, AD was the most

Table 1: Age and sex distribution of the examined group.

Age group	Male		Female		Total
	No.	%	No.	%	
Neonates < 1 month	41	47	46	52	87
Infants 1-12 months	340	50	328	49	668
Total	381	50	374	49	755

Table 2: The most common five diseases in neonates and infants.

Frequency	Neonates no = 87		Infants no = 668			
	Disease	No	%	Disease	No	%
1	Napkin candidiasis	10	11.5	Atopic dermatitis	156	23.4
2	Umbilical granuloma	8	9.2	Napkin candidiasis	52	7.8
3	Napkin dermatitis	7	8	Seborrheic dermatitis	48	7.2
4	Skin fold candidiasis	7	8	Diaper dermatitis	46	6.9
5	Seborrheic dermatitis	5	5.7	Impetigo	37	5.5

Table 3: Frequency distribution of skin diseases among infants in boys and girls.

No.	Dermatosis	Male		Female		Total		M:F	p-value
		No.	%	No.	%	No.	%		
1-	Atopic dermatitis	98	62.8	58	37.2	156	23.4	1.6:1	0.003
2-	Napkin candidiasis	25	48.1	27	51.9	52	7.8	0.9:1	0.997
3-	Seborrheic dermatitis	25	52.1	23	47.9	48	7.2	1.1:1	0.998
4-	Irritant diaper dermatitis	24	52.2	22	47.8	46	6.9	1.1:1	0.997
5-	Insect bites	20	43.5	26	56.5	46	6.9	0.8:1	0.564
6-	Impetigo	17	45.9	20	54.1	37	5.5	0.8:1	0.872
7-	Skin folds candidiasis	10	43.5	13	56.5	23	3.4	0.7:1	0.843
8-	Papular urticaria	12	66.7	6	33.3	18	2.7	2:1	0.400
9-	Gluteal granuloma	2	14.3	12	85.8	14	2.1	0.2:1	0.196
10-	Contact dermatitis	2	16.7	11	84.6	13	1.9	0.2:1	0.254
11-	Psoriasis	5	41.7	7	58.3	12	1.8	0.7:1	0.985
12-	Oral thrush	7	58	5	41.7	12	1.8	1.4:1	0.977

Table 4: Skin diseases in infants according to their etiology.

Specific group	Disease	No.	%	Specific group	Disease	No.	%	
Dermatitis	Atopic dermatitis	156	23.4	Infestations	Insect bites	56	6.9	
	Diaper dermatitis	63	9.4		Papular urticaria	18	2.7	
	Seborrheic dermatitis	48	7.2		Scabies	17	2.5	
	Contact dermatitis	13	1.9		Leishmaniasis	1	0.1	
	Infections	Non-specific dermatitis	4	0.6	Nevi / Nevoid lesions	Vascular	12	1.8
		Frictional dermatitis	3	0.4		Nevus depigmentosus	1	0.1
		Pityriasis alba	3	0.4		Nevocellular nevus	1	0.1
		Keratosis pilaris	2	0.3		Epidermal nevus	1	0.1
		Nummular eczema	2	0.3		Nevoid hypertrichosis	1	0.1
Bacterial				Nevus sebaceous		1	0.1	
Crusted impetigo		30	4.5	Genodermmatosis	Epidermolysis bullosa	6	0.9	
Bullous impetigo		7	1.0		Ichthyosis	5	0.7	
Boils		7	1.0		Acrodermatitis enteropathica	3	0.4	
Abscess	3	0.4	Ectodermal dysplasia		3	0.4		
Otitis externa	2	0.3	Others	Neurofibromatosis	1	0.1		
Folliculitis	1	0.1		Klippel-trenaunay syndrome	1	0.1		
Perioritis staphylogenes	1	0.1		Psoriasis	12	1.8		
Wound infection	1	0.1		Miliaria	9	1.3		
Chondritis	1	0.1		Telogen effluvium	6	0.9		
Viral				Urticaria	5	0.7		
Viral exanthema	6	0.9		Alopecia areata	5	0.7		
Roseola infantum	4	0.6		Burn	5	0.7		
Gianotti-crostiti	3	0.4		Mastocytosis	4	0.6		
Mulloscum contagiosum	3	0.4		Cradle cap	4	0.6		
Herpes simplex	3	0.4		Intertrigo	4	0.6		
Chicken pox	2	0.3	Juvenile xanthogranuloma	3	0.4			
Warts	1	0.1	Infantile acne	2	0.3			
Rubella	1	0.1	Histiocytosis	2	0.3			
Herpes zoster	1	0.1	Umbilical granuloma	2	0.3			
Fungal			Erythema multiforme	2	0.3			
Candidal infection	98	14.7	Drug eruption	2	0.3			
Dermatophytes infections	4	0.6	Pruritus vulvae	2	0.3			

Specific group	Disease	No.	%
	Foreign body reaction	1	0.1
	Allergic reaction to a vaccine	1	0.1
	Chronic granulomatous disease	1	0.1
	Dermatitis artefacta	1	0.1
	Oral fibroma	1	0.1

Table 5: Skin diseases in neonates according to their etiology.

Specific groups	Disease	No.	%
Infections	Umbilical granuloma	8	9.2
	Bacterial		
	Bullous impetigo	1	1.1
	Perioritis staphylogenes	3	3.4
	Candidal		
	Napkin candidiasis	10	11.5
	Skin folds candidiasis	7	8
Dermatitis/ dermatosis	Oral thrush	3	3.4
	Napkin dermatitis	7	8
	Seborrheic dermatitis	5	5.7
	Intertrigo	3	3.4
	Psoriasis	1	1.1
	Contact dermatitis	1	1.1
	Atopic dermatitis	1	1.1
Nevi /Nevoid lesions	Salmon patch	2	2.3
	Hemangiomas	1	1.1
	Port-wine stain	1	1.1
	Nevus depigmentosus	1	1.1
	Café-au-lait spots	1	1.1
Genodermatosis and congenital anomalies	Epidermolysis bullosa	2	2.3
	Ichthyosis	1	1.1
	Skin tag	1	1.1
	Accessory tragus	1	1.1
	Congenital vitiligo	1	1.1
Others	Erythema toxicum neonatorum	5	5.7
	Miliaria	9	10.3
	Milia	2	2.3
	Acne	5	5.7
	Telogen effluvium	3	3.4
	Mastocytosis	1	1.1
	Vitiligo	1	1.1

common diagnosis (Table 7); fifty percent of their outpatients' infants consultations were caused by AD, the second most common disease in their study were IDD, which affected 13% of their infants.⁵ In the USA, the dermatology subspecialty clinics had a higher frequency of visits by children with chronic skin disorders, especially AD. AD affects 10–20% of infants in the USA, and it is the commonest disease affecting infants (39). In South Africa, AD was also the most common diagnosis constituting 18.7% of the total number of consultations, followed by impetigo which affected 7.6% of their infants

Table 6: The most common dermatosis which affects infants and its relation to the type of feeding

No.	Dermatosis	Exclusive breastfed infants %	Bottle-fed infants %
1-	Atopic dermatitis	32	66.7
2-	Napkin candidiasis	30.8	69.2
3-	Seborrheic dermatitis	68	31
4-	Irritant diaper dermatitis	36.9	63.1
5-	Insect bites	40.5	59.4
6-	Impetigo	48.6	45.9
7-	Skin folds candidiasis	45	54.5
8-	Papular urticaria	66.6	33.3
9-	Gluteal granuloma	60	40
10-	Contact dermatitis	45.4	54.5
11-	Psoriasis	52.8	57
12-	Oral thrush	66.6	31

(40). From these comparisons, it appears that the frequency of different skin disorders in the outpatient clinic in our study is similar to what had been found in a neighboring country (Kuwait),⁵ and in a developed country like the USA and South Africa. The difference between our study and Sharquie and Al-Khafaji study³ is related to the high incidence of scabies recorded at that time 1989 which led to skin infections. At the present time, the incidence of scabies has dropped markedly, this may be related to the cyclical epidemiological nature of the disease. Scabies is known to come in epidemics every 15-20 years, and then disappear, this explained by raised herd immunity. Three in a similar study conducted in the north of Iraq (Sulaimani) recently the most common five diseases which affected infants was endogenous dermatitis (35%), followed by papular urticaria (14.7), diaper rash (11%), exogenous dermatitis (9%), and bacterial infections (8%) (Table 7). These findings are comparable with our findings.⁶

Regarding the neonates, the most common diagnosis in our study is Napkin candidiasis (11.5%), followed by Umbilical granuloma (9.2%), while IDD affected 8%, and Skin fold candidiasis (8%), then SD (6%). (Table 8) In the Kuwaiti study the most common disease was IDD which affected 32% of neonates, followed by SD 26%, then miliaria rubra 16%, AD 13%, and Impetigo 7.6% (37), while in a study conducted in Syria in 2005, IDD was the most common disease affecting (12.7%) of their neonates, followed by breast abscess (10%), then cradle cap (8%), SD (5%), and intertrigo (3.8%).⁷ (Table 8). The higher incidence of napkin candidiasis observed in our patients may be related to the fact that our department is a referral one, therefore most of our patients have used a topical preparation before consultation, most of these preparations contain steroids which encourage the growth of Candida. It is also known that IDD does not persist for more than 3 days unless it is complicated by candidal infection.⁸

Regarding atopic dermatitis, the present study showed that the M: F ratio in AD was 1.6:1. This is comparable to Sharquie and Nanda studies,^{1,3} while in many developed countries, the

Table 7: The most common skin diseases among infants in outpatient clinics

No	Kuwait		Iraq		North of Iraq Sulaimani		Iraq	
	Disease	%	Disease	%	Disease	%	Disease	%
1	Atopic dermatitis	50	Infection/ Infestation	30	Endogenous dermatitis	35	Atopic dermatitis	23.4
2	Irritant diaper dermatitis	13	Eczema/ dermatitis	7.6	Papular urticaria	14.7	Napkin candidiasis	7.8
3	Seborrheic dermatitis	9	Irritant diaper dermatitis	4	Diaper rash	11	Seborrheic dermatitis	7.2
4	Impetigo	4	Psoriasis	1.8	Exogenous dermatitis	9	Irritant diaper dermatitis	6.9
5	Alopecia areata	0.8	Alopecia areata	0.8	Bacterial infection	8	Impetigo	5.5

Table 8: The most common skin diseases among neonates in the outpatient clinic

No.	Kuwait (1999)		Syria (2003)		Iraq (2005)	
	Disease	%	Disease	%	Disease	%
1	Irritant diaper dermatitis	32	Irritant diaper dermatitis	12.7	Napkin candidiasis	11.5
2	Seborrheic dermatitis	26	Breast abscess	10	Umbilical granuloma	9.2
3	Miliaria rubra	16	Cradle cap	8.2	Irritant diaper dermatitis	8
4	Atopic dermatitis	13	Seborrheic dermatitis	5.1	Skin fold candidiasis	8
5	Impetigo	7.6	Intertrigo	3.8	Seborrheic dermatitis	5.7

Table 9: The main features of Atopic dermatitis in infants

Item	No.	%	
Sex	Male	98	62.8
	Female	58	37.2
	Total	156	23.4
Sites	Face	115	73.7
	Extremities	76	48.7
	Trunk	56	35.9
Morphology	Chronic scaly	92	59
	Subacute	90	57.7
	Vesicular	24	15.4
Feeding	Bottle	78	50
	Breast	52	32.1
	Mixed	26	16.7
Family history	Mother only	84	53.8
	Father only	13	8.3
	Both mother and father	14	8.97
	Others	15	9.6
	-ve	30	19.2
Onset	Mean age =4.2 ±2.9 months		
	Before 3 months	55	35.3
	After 3 months	101	64.7
Secondary infections	Bacterial	24	15.4
	Candidal	12	7.7
	Viral	-	-

sex distribution was equal.^{6,9} The mean age of onset was 4.2 + 2.8 months, indicating a late onset of AD in Iraqi infants. This is similar that mentioned in the previous Iraqi study.¹ This late-onset in comparison with western countries may be due to the tendency of infants to be nursed in a humid, warm environment (the infant is wrapped by multiple layers of clothing called (Qumat), in addition to the nature of the

weather in Iraq.^{11,12} This study showed more AD tendency to be inherited from the mother than the father (Table 9); many investigators mentioned this fact.¹³ The higher percentage of bottle-fed babies than those on exclusive breastfeeding in the present study (Table 9), goes with what has been reported that exclusive breastfeeding gives protection against the development of AD.¹⁴ In neonates, one case of AD (1.14%) has been seen in this study. This low percentage may be due to the late age of onset of AD in our country. A higher percentage have been recorded in Kuwait (13%).⁵

Regarding Seborrheic dermatitis, a higher percentage of infants who developed their rash during the 1st month of life in this study indicates an earlier onset than AD. Males were more than females; this is similar to the findings (Sharquie and Nanda).^{1,3} The most commonly affected site was the postauricular area similar to what has been suspected.¹⁵ The association of SD in 37% of the patients with AD goes with what has been published that there is an overlap between SD, and AD.¹⁵ In both age groups (neonates and infants), the clinical picture is not different from what has been reported in which there is glazy erythema affecting the skin folds and greasy, scaly face with associated cradle cap. Five cases of erythroderma were observed in the present study. SD is a known cause of erythroderma.^{11,15,16}

Regarding napkin rash, the higher number of bottle-fed babies and the association with gastroenteritis among the affected infants is similar to what has been found in a previous Iraqi study.¹⁷ Gluteal granuloma was the 3rd most common cause of napkin rash in this study (Table 10); the increasing number of patients affected may be due to the overuse of potent topical steroids.¹⁷ Surprisingly, the number of females here was much more than males with M: F ratio equals to 1:10. This can be explained by the higher incidence of urinary tract infection in females due to short urethra and the resulting increase in IDD and napkin candidiasis, which are the main causes of gluteal granuloma.^{15,17}

Table 10: The main causes of napkin rash in infants.

No.	Disease	Male		Female		M: F	Total	%
		No.	%	No.	%			
1	Napkin candidiasis	25	48	27	51.9	0.9:1	52	7.9
2	Irritant diaper dermatitis	24	52.2	22	47.8	1.1:1	46	6.9
3	Gluteal granuloma	2	14.3	12	85.7	0.2:1	14	2.1
4	Jacquet erosive dermatitis	1	33.3	2	66.7	0.5:1	3	0.4
5	Seborrheic dermatitis	6	60	4	40	1.5:1	10	1.5
6	Napkin psoriasis	5	55.6	4	44.4	1.3:1	9	1.3
7	Phimosis	3	-	-	-	-	3	0.4
8	Gluteal abscess	1	50	1	50	1:1	2	0.3
9	Diaper bullous impetigo	1	50	1	50	1:1	2	0.3
10	Boils	1					1	0.1
11	Intertrigo	2	50	2	50	1:1	4	0.6

CONCLUSIONS

- Atopic dermatitis is the no. 1 skin disease among Iraqi infants.
- Napkin rash is still one of the main problems among Iraqi infants, especially candidal napkin rash and irritant dermatitis.
- The frequency of infections and infestations had dropped markedly in the present time.
- The frequency of skin diseases among Iraqi infants and neonates is similar to that of some neighboring countries (Kuwait and Syria) and developed countries as the USA.

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