

Lesional Diagnostic Approach of Common Dermatoses in Children at the University Clinics of Kinshasa - Democratic Republic of Congo

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ABSTRACT

Context and objectives: Several authors approach epidemiological studies on dermatoses using an etiological diagnostic approach; the Willanist school being mostly reserved for learners of dermatology and/or non-dermatologist doctors. The objective of this study is to determine the profile of dermatoses in children using exclusively the type of elementary lesion. **Methods:** In a retrospective, analytical and descriptive study, the data of children with dermatoses followed in the Dermatology Service of the University Clinics of Kinshasa between June 1, 2009 and December 31, were collected. The parameters of interest included epidemiological and clinical characteristics.

Results: The hospital frequency of dermatoses in children (DC) according to the lesional diagnostic approach is 40.89% (818/1994). Their median age was 60 months (QEI 60-65.9) with a female predominance (55.7%, sex ratio of 1.25/1). There were more infants (30.6%). DC predominated in the dry season (54%). The entangled (21.02%) and vesicular (20.29%) lesional types were the most numerous, with ringworm of the scalp (31.9%) and atopic dermatitis (54.2%) respectively. The papular, erythematous, tumor and entangled lesion types were related to sex and age; pustular and tumor exclusively related to the season, in a statistically significant way ($p < 0.05$). Taken as a whole, the most frequent dermatoses were atopic dermatitis (11%), prurigo strophulus (10.8%), impetigo (7.4%), Tinea capitis (6.7%) and scabies (6.4%).

Conclusion: The importance of this work lies in the interest of taking into account the two approaches, lesional and etiological of dermatoses, for their global management and research studies. Indeed, the lesional approach, also important in the study of dermatoses, appears to our knowledge to be poor in references in the literature.

Keywords: Dermatoses, Children, Lesional diagnostic approach, Kinshasa

INTRODUCTION

Dermatoses are a frequent reason for consultation in pediatric settings [1-4]. These are most often diagnosed according to the etiological approach by dermatologists [5] and lesional by learners in dermatology and/or non-dermatologist doctors who have some notions of elementary lesions.

Several authors in the subject approach the epidemiological study of dermatoses by applying the school of William Dubreuilh which is based on the study of the etiology or pathophysiology of skin diseases [1, 2, 4, 6, 7] does not always require paraclinical confirmation in daily clinical practice.

On the strength of this observation, we proposed to conduct an exclusively the description of elementary lesions

to make a diagnosis of the type of dermatosis. The purpose of our study is to determine the main dermatoses in children in hospitals using the lesion diagnostic approach.

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PATIENTS AND METHODS

Our work was carried out at the University of Kinshasa, specifically at the University Clinics of Kinshasa (UCK) in the department of dermatology in the Democratic Republic of Congo (DRC).

It was a retrospective descriptive and analytical study on 818 files of patients from 0 to 18 years old, collected in the dermatology department of UCK in the DRC for a period of 31 months (June 1, 2009 to December 31, 2011). 818 children were examined at the UCK dermatology department during the study period. Included were those who were 0-18 years of age whose medical records included the parameters of study interest and whose informed consent was obtained. Children over the age of 18 were not included in the study, or those of children who met the fixed age range but whose medical records were incomplete in relation to the variables sought and informed consent. The data listed were epidemiological (age, sex, month of the year and season) and clinical (lesion group and clinical diagnosis of DC). The age was distributed as follows: 0-2 years (infants), 3-5 years (preschool age), 6-12 years (school age) and 13-18 years (adolescence). The season was divided into two: rainy and dry. Thus, any dermatosis diagnosed during the month of January, February, April, May, September, October, November and December was considered to appear in the rainy season, on the other hand for those in the dry season, these were March, June, July and August (10). The diagnosis was based on the clinic alone at the start of the type of elementary lesion.

- Elementary lesion: initial or secondary lesion, as it appears with the naked eye, thanks to it we make an immediate diagnosis and from there, a classification of the dermatosis.
- Entangled lesion: association of more than one elementary lesion.
- Lesional group: group of dermatoses having the same type of elementary lesion in common.
- Clinical diagnosis: dermatosis objectified at the end of the clinical examination on departure from the type of elementary lesion.

Information useful for the study was taken from the registers and all patient consultation cards meeting the study standards and during the period selected for this purpose. They were then recorded on the data collection sheets, containing all of our study variables. An hp EliteBook brand laptop computer was used to compile this data in Excel software in order to identify, group and analyze all these variables of interest. Confidentiality and anonymity were respected when collecting data and taking photos for children whose informed consent was obtained. Difficulties encountered. There were many patient records that did not contain all of the study parameters. All the data were entered and analyzed using SPSS software (Statistical package for social sciences,

Chicago) for Windows version 21. The statistical processing of the data consisted in calculating the means, the standard deviation, the median and the interquartile range for quantitative variables and proportions for qualitative variables. Pearson's chi-square test or Fisher's exact test was used to compare the proportions as appropriate. The threshold for statistical significance was set at 5%.

RESULTS

Epidemiological data

Out of 1994 patients followed in the service during the study period, 818 were children (40.8%); the female sex was predominant (55.7%) with a female/male sex ratio of 1.25 (**Table 1**). Their median age was 60 months (60-65.9 months), with extremes 0 to 218 months. Infants were the largest age group (30.6%). Dermatoses predominated in the dry season (54.0%) with peaks in February (12.3%) and July (11.9%).

Clinical data

The distribution of lesional types of dermatoses according to sex (**Table 2**) had shown that entangled (28.01%) and vesicular (20.3%) were the most frequent with predominance in the male sex (28.21%, $p < 0.001$ for the entangled type). The papular (19.1%), erythematous-scaly (10.5%), tumor (5.9%), erythematous (4.6%) and entangled (28.01%) lesional types were sex-linked with $p < 0.05$.

The distribution of lesional types of dermatoses according to age

The type of elementary lesion was related to age ($p < 0.05$), with the exception of dyschromias, nodules, scales, keratoses, hair loss and undefined lesions (**Table 3**). Vesicular lesion types were most observed between 0-2 years old and 6-12 years old; however, the papular type was the prerogative of the pre-school and adolescence periods ($p < 0.05$).

The distribution of lesion types according to the seasons (**Table 4**) indicates that only the pustulars and the tumors were statistically significantly related to the season.

In terms of frequencies, the distribution of lesional types of childhood dermatoses (**Table 5**) had shown that atopic dermatitis (52.2%) was the most frequent in the group of vesicular dermatoses; prurigo strophulus (57.1%) in the papular group, pink pityriasis from Gibert (39.5%) for the erythematous type, impetigo (60.4%) for the pustular type; hypertrophic scars (31.3%) for the tumor type; diaper rash in W (63.1%) for erythematous; vitiligo (78.1%) for the dyschromic type and tinea capitis (31.9%) for the entangled type.

According to (**Table 6**), five diagnoses were found to be predominant with atopic dermatitis and prurigo strophulus leading, followed by impetigo, tinea capitis and scabies.

Table 1. Epidemiological data.

Variables	n=818	Percentage
Sex		
Male	362	44.3
Female	456	55.7
Age		
0-2 years	250	30.6
3-5 years	188	23.0
6-12 years	215	26.3
13-18 years	165	20.2
Season		
Dried	442	54.0
Rainy	376	46.0
Month of admission		
January	53	6.5
February	101	12.3
March	88	10.8
April	70	8.6
May	55	6.7
June	55	6.7
July	97	11.9
August	77	9.4
September	68	8.3
October	31	3.8
November	51	6.2
December	72	8.8

Table 2. Type of lesional by sex.

Type lésionnel	Overall n=818	Male n=365	Female n=453	p
Bladdery	166 (20.3)	77 (21.3)	89 (19.5)	0.297
Papular	156 (19.1)	53 (14.6)	103 (22.6)	0.003
Erythematosquameux	86 (10.5)	25 (6.8)	61 (13.4)	0.001
Pustular	101 (12.3)	43 (11.9)	58 (12.7)	0.400
Tumor	48 (5.9)	13 (3.6)	35 (7.7)	0.009
Erythematosis	38 (4.6)	24 (6.5)	14 (3.0)	0.011
Dyschromic	33 (4.0)	17 (4.7)	16 (3.5)	0.248
Bullous	3 (0.4)	3 (0.8)	0 (0.0)	-
Nodular	1 (0.1)	0 (0.0)	1 (0.2)	-
Intricate	172 (28.01)	103 (28.21)	69 (15.2)	<0.001
Scaly	7 (0.8)	3 (0.82)	4 (0.88)	0.395
Keratosis	2 (0.2)	1 (0.27)	1 (0.22)	0.779
Hair loss	3 (0.3)	1 (0.27)	2 (0.44)	0.607
No elementary lesion	2 (0.2)	2 (0.5)	0 (0.0)	0.617

Table 3. Distribution of lesion types by age.

Lesional type	Age				p
	0-2 years n=251	3-5years n=192	6-12 years n=212	13-18 years n=163	
Bladder	69(27.6)	34(17.7)	46(21.6)	17(10.4)	<0.001
Papular	35(14.0)	44(22.9)	38(17.9)	39(23.9)	0.029
Erythematous scaly	22(8.8)	12(6.2)	21(9.9)	31 (19.0)	0.002
Pustular	37(14.8)	22(11.4)	12(5.6)	30(18.4)	0.001
Tumor	22(8.8)	9(4.6)	14(6.6)	3(1.8)	0.001
Erythematosis	33 (13.1)	4 (2.0)	0(0.0)	1 (0.6)	<0.001
Dyschromic	4(1.5)	8(4.1)	11(5.1)	10(6.1)	0.068
Bullous	3(1.1)	0(0.0)	0(0.0)	0(0.0)	-
Nodular	0(0.0)	0(0.0)	0(0.0)	1(0.6)	-
Entangled	26(10.35)	53(27.6)	64 (30.18)	29 (17.7)	<0.0001
Scaly	0 (0.0)	3 (1.5)	4 (1.88)	0 (0.0)	1
Keratosis	0 (0.0)	1 (0.5)	1 (0.4)	0 (0.0)	0.480
Hair loss	0 (0.0)	2 (1.0)	1 (0.4)	0 (0.0)	1
No elementary lesion	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.2)	-

Table 4. Distribution of lesion types by season.

Lesional group	Dry season n = 454	Rainy season n = 364	p
Bladdery	91 (20.0)	75 (20.6)	0.445
Papular	81 (17.4)	75 (20.6)	0.309
Erythematous scaly	52 (11.4)	34 (9.3)	0.147
Pustular	41 (9.0)	60 (16.4)	0.003
Tumor	35 (7.7)	13(3.5)	0.005
Erythematosis	19 (4.1)	18(4.9)	0.156
Dyschromic	19 (4.1)	14(3.8)	0.408
Bullous	3 (0.6)	0(0.0)	-
Nodule	0 (0.0)	1(0.2)	-
Intricate	102 (26.4)	64(17.5)	0.288
Scaly	7 (1.5)	0 (0.0)	0.445
Keratosis	1 (0.2)	1 (0.2)	-
Hair loss	1 (0.2)	2 (0.5)	-
No elementary lesions	2 (0.4)	0 (0.0)	-

Table 5. Distribution of dermatoses according to lesional types.

Dermatoses by lesional group	n	%
Intricate	172	100.0
Tinea capitis	55	31.9
Scabiosa	53	30.8
Tinea corporis	25	15.5
Creeping myasias	9	5.2
Onychomycosis	3	1.7
Furunculoid myiasis	1	0.5
Tungiasis	1	0.5
To be determined	9	5.2
Ingrown nail	4	2.3
Erysipelas	1	0.5
scleroderma	1	0.5
Meadow	1	0.5
Baby collodion	1	0.5
Vesicular type	166	100.0
Atopic dermatitis	90	54.2

Contact dermatitis	17	10.2
Sudamina	46	27.7
Shingles	2	1.2
Herpes	5	3.0
Varicella	6	3.6
Papular	156	100.0
Urticaria	28	17.9
Prurigo strophulus	89	57.1
Polymorphic erythema	5	3.2
Granuloma annulaire	3	1.9
Lichen planus	7	4.5
Epidermodysplasia verruciformis	2	1.3
Common wart	17	10.9
Keratosis pilaris	4	2.6
Pityriasis rubra pilar	1	0.6
Pustular	101	100.0
Impetigo	61	60.4
Acne vulgaris	31	30.7
Folliculitis	9	8.9
Erythematous scaly	86	100.0
Pityriasis rosea of Gibert	34	39.5
Eczématide	23	26.7
Seborrheic dermatitis	11	12.7
Pytiriasis versicolor	10	11.6
Psoriasis	4	4.6
Tinea corporis	1	1.1
To be determined	2	2.3
Tumor	48	100.0
Hypertrophic scar	15	31.3
Infantile hemangioma	14	29.2
Molluscum contagiosum	8	16.7
Verrucous naivus	3	6.3
Anogenital warts	2	4.2
Neurofibromatosis	2	4.2
Kaposi's disease	2	4.2
Oral condyloma	1	2.1
pyogenic granuloma	1	2.1

Erythematousus	38	100.0
Toxiderma	8	21.0
Diaper rash in W	24	63.1
Diaper rash in Y	6	15.7
Dyschromic	33	100.0
Vitiligo	25	78.1
Sequelar hyperpigmentation	7	21.2
Mosaicism	1	3.1
Scaly	7	100.0
Ichthyosis vulgaris	7	4.0
Keratosis	2	100.0
Palm-plantar keratoderma	2	1.1
Hair loss	3	100.0
areata	3	1.7
No elementary lesions	2	100.0
Gonorrhea	2	1.1

Table 6. Most frequent diagnoses.

Diagnostics	n	%
Atopic dermatitis	90	11.0
Prurigo strophulus	89	10.8
Impetigo	61	7.4
Tinea capitis	55	6.7
Scabiosa	53	6.4
Sudamina	46	5.6
Pityriasis rosea of Gibert	34	4.1
Acne vulgaris	31	3.7
Urticaria	28	3.4
Vitiligo	25	3.0
Tinea corporis	25	3.0
Diaper rash in W	24	2.9
Eczematide	23	2.8
Common wart	17	2.0
Contact dermatitis	17	2.0

DISCUSSION

The aim of our study was to determine the incidence of dermatoses in children (DC) according to the lesion diagnostic approach, in the dermatology department of the CUK.

The frequency of DC in our study was 40.8%, a finding similar to Yemen [8] and Egypt [9], respectively 45.1% and 40%, contrary to Malian observations [2,10]. The female sex was in the majority (55.7%) with a sex ratio M/W of 1.25. Our results agree with those observed in the East of the DRC [11] but diverge from those of the Nigerian [12] and Turkish [13] studies where children of school age were more numerous. The predominance of dermatoses in infants could be explained by the precarious living conditions of the people of Kinshasa in general and the confines of the CUK in particular; demographic realities could justify the high frequency of the female sex [4]. The dry season was the ally of DC in 54% of cases with high peaks in February (12.3%) and in July (11.9%). As in our study on the profile of the etiological groups of DC, the observations are the same [4] and agree with those of Emine et al. [13] but diverge from those of El Khateeb et al. [9]. The dry and cold climate of the dry season favors on the one hand cutaneous dryness, great provider of cutaneous irritations and break-ins, consequently of the occurrence of dermatoses and on the other hand the bodily uncleanness because of the decrease in frequency of body bath.

The entangled (28.01%), vesicular (20.3%) and papular (19.1%) dermatoses were the most frequent in our work (**Table 2**). The occurrence of DC was related to sex (lower p ($p < 0.05$; **Table 2**) for the entangled lesional types (tinea capitis: 31.9%; scabiosis: 30.8%), erythematous (EFW: 63.1%), tumor (hypertrophic scar: 31.3%), erythematous-scaly (PRG: 39.5%) and papular (prurigo strophulus: 67.1%)

Without taking into account the classification of DC according to the lesional approach by other authors, tinea capitis and scabiosis were found to be the most frequent of entangled dermatoses and represented 6.7% and 6 respectively in the total study population, 4%. By comparing this diagnostic finding to those of similar works but according to the etiological approach, we are in agreement with Seudjip et al. [4] but in contradiction with Seudjip et al. [14] where scabiosis represented 30.6% and tinea capitis 3.8% of the total number of infectious dermatoses.

Lesion types were age-related for entangled, erythematous, tumor, pustular, erythematous-scaly, papular and vesicular dermatoses. Tinea capitis and scabiosis are the preserve of the age group of 3 to 12 years ($p < 0.0001$). For tinea capitis, we are going in the same vein as Seudjip et al. [4,14] and Fofana et al. [2]. As for scabiosis, our results confirm those of Seudjip et al. [14], although their study focused exclusively on infectious dermatoses in children.

The occurrence of scabies and ringworm of the scalp during the age group of 3-12 years could be explained by the growth phase that children go through at this age, the significant interhuman and environmental contact [14,15], in addition to the low socio-economic level [16].

Vesicular dermatoses were sex-linked ($p < 0.001$), with a high peak in infants (27.6%) (**Table 3**) and atopic dermatitis was the most common (54.2%). Still taken from the etiological angle, several authors observe vesicular dermatoses as being the most numerous in infants [17-19]. Our predominance of atopic dermatitis agrees with the finding of Seudjip et al. [4,11].

The precarious hygiene of the skin of the infant in our environment, associated with the tracksuit in tropical region, can justify *inter alia* the preponderance of vesicular dermatoses. Urbanization, the gradual growth of pollution in large cities and cutaneous xerosis due to the cold and dry climate of the dry season could justify the preponderance of atopic dermatitis [4].

Papular dermatoses came in 3rd position with 19.1% of cases (**Table 2**); they were related to age ($p = 0.029$) with high peaks between 3-5 years (22.9%) and 13-18 years (23.9%); prurigo strophulus being the most frequent diagnosis in this group (57.1%).

Our finding is similar to that of several authors [4,20] for the age group of 3 - 5 years contrary to the observation of Lenga et al. [21] where the predominance is between 6 - 8 years.

Insect bites, wearing non-covering clothing, poor sanitation and environmental pollution may support the increased occurrence of prurigo strophulus in children [1,21,22]. The diagnostic record shows that the ten most frequent DCs were identical according to the etiological and lesional diagnostic approaches and this, at comparable frequencies [4].

CONCLUSION

The importance of this work lies in the interest of taking into account the two approaches, both lesional and etiological, for the global management of dermatoses. In fact, the lesional approach, which is also equally important in the study of dermatoses, appears to our knowledge to be poor in references in the literature.

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CONFLICT OF INTERESTS

The author declared no conflict of interest.

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