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Prevalence of dermatoses among pediatric patients in a secondary hospital in Eskisehir, Turkey: A cross-sectional study

Eskişehir'deki ikinci basamak sağlık merkezine başvuran çocuk hastaların deri hastalıkları prevalansı: Bir kesitsel çalışma

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Abstract

Aim: To determine prevalence of skin diseases among pediatric patients in Eskisehir, Turkey.
Methods: This was a cross-sectional study. Medical record of the outpatient clinics of Dermatology in Eskisehir Yunus Emre State Hospital was retrospectively assessed. Children (between 0 and 18 years old) who attended the dermatology out-patient clinic between January 2017 and December 2017 were included in the study.
Results: A total of 9,057 patients were included in the study and 4,204 (46.41%) patients were male. The ten most frequent diagnoses and their prevalences were: acne (27. 7%), viral warts (13.6%), contact dermatitis (13.2%), xerosis cutis (8.1%), seborrhoeic dermatitis (6.4%), urticaria (6.2%), bacterial infections (4.3%), dermatophytosis (3.7%), nevus (2.5%), and atopic dermatitis (2.5%).
Conclusions: Acne, viral warts, and contact dermatitis were the three most common skin diseases that we detected in pediatric age groups Eskisehir, Turkey. In order to reveal the prevalence of pediatric skin diseases, further epidemiological studies are needed.
Key Words: Epidemiology, pediatric dermatology, skin diseases

Öz

Amaç: Eskişehir'deki pediatrik hastaların deri hastalıkları prevalansını ortaya koymak.
Yöntemler: Bu araştırma kesitsel bir çalışmadır. Eskişehir Devlet Hastanesi Dermatoloji Polikliniği'ne başvuran hastaların kayıtları otomasyon dosya sisteminden retrospektif olarak analiz edildi. Ocak 2017 ile Aralık 2017 tarihleri arasında dermatoloji polikliniğine başvuran çocuk hastalar (0-18 yaş arasındaki) çalışmaya dahil edildi.
Bulgular: Çalışmamıza 4.204 (%46,41)'ü erkek, toplam 9.057 hasta dahil edildi. En sık rastlanan on hastalık ve prevalansı şu şekildeydi: akne (%27,7), viral siğiller (%13,6), kontakt dermatit (%13,2), kserosis kutis (%8,1), seboreik dermatit (%6,4), ürtiker (%6,2), bakteriyel enfeksiyonlar (%4,3), dermatofitozlar (%3,7), nevüs (%2,5) ve atopic dermatit (%2,5).
Sonuç: Eskişehirde akne, viral siğiller ve kontakt dermatitin en sık karşılaşılan üç pediyatrik dermatolojik hastalık olduğu tespit edildi. Pediatrik deri hastalıkları prevalansını ortaya koymak için daha fazla epidemiyolojik çalışmalara ihtiyaç vardır.
Anahtar Kelimeler: Deri hastalıkları, epidemiyoloji, pediatrik dermatoloji

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Introduction

Development of skin diseases is influenced by external factors, such as socioeconomic status, climate, geographic region, personal habits, and also internal factors, such as gender, age, and heredity. The prevalence of skin diseases differs between regions as a result of these factors [1].

Additionally, physiology of the skin tissue in children is very different from adults. Moreover, there are many physiological and anatomical differences between newborn, infants, preschoolers, school-age children, and adolescents. Therefore, the frequency, distribution and characteristics of the diseases seen in children are different from adults. Moreover, the prevalence of skin diseases among age groups in children is different depending on all these factors [2].

The prevalence of skin diseases in pediatric patients is very important in planning preventive and therapeutic healthcare services [1].

This study was performed in Eskisehir. It is located in the Central Anatolia region of Turkey and has an altitude of 732 meter. The average air temperature values in the most recent 40 years measured between - 3.7°C and + 29°C. The city was in the 7th line in the evaluation of national socioeconomic development [1].

Information on the prevalence of skin disorders in pediatric patients is limited. Best of our knowledge; this research article was the first prevalence study in children in Eskisehir, Turkey. We aimed to clarify the prevalence of skin disorders among pediatric patients in Eskisehir.

Material and methods

This study was a cross-sectional study. Ethical approval was taken from the local ethics committee. The study protocol complied with the ethical guidelines of the Declaration of Helsinki of the World Medical Association. Written informed consent could not be obtained from the parents of the patients due to retrospective design of the study.

The medical records of the outpatient clinics of Dermatology in Eskisehir Yunus Emre State Hospital were retrospectively assessed. Children who attended the dermatology outpatient clinics between January 2017 and December 2017 were included in the study. Physical examinations were performed by seven different dermatologists. A total of 30,001 applications were recorded at the dermatology out-patient clinics of Eskisehir Yunus Emre State Hospital. Of the 30,001 patients, 12,872 (42.9%) were children who were under 18 years old. Only one application per patient was included in the study. In order the find accurate prevalence, we only included new patients in the present study. Of the 12,872 patients, 3,815 patients (29.6%) were excluded from the study and 9,057 new patients were included in the study.

The patients were diagnosed based on anamnesis and clinical features and confirmed by laboratory tests (e.g. fungal direct examination) or skin biopsy when indicated. The International Classification of Diseases (ICD-10) was used in order to classify the diagnoses.

The patients were divided into four groups according to the age groups as follows: newborn and infant (0-2 years), preschoolers (3-5 years), scholars (6-11 years) and adolescence (12 – 17 year).

Statistical Analysis

Data were entered into an Excel spreadsheet and analyzed with the Statistical Package for the Social Sciences (SPSS 15.0 Statistical software, SPSS Inc., Chicago, IL, USA). The calculated values are given as the mean values ± standard deviation (SD). Student's t-test was used to compare mean age. The Mann-Whitney U test was used for quantitative data without normal distribution. The Chi-square test was used to compare qualitative data. A p value less than 0.05 was considered to be statistically significant.

Results

Of 9,057 patients, 4,204 (46.4%) were male and 4,853 (53.6%) were female. Male to female ratio was 0.86. Mean age of the patients was 11.7±4.9 years (median age 13, the age range 0-17 years). Mean age of the female children was 11.92±4.67 years (median age: 13, the age range 0-17 years). In the male children, it was 11.48±5.05 years and median age was 13 years (the age range 0-17 years).

There was statistically no significant difference between sex and age (p=0.784).

Of 9,057 patients, 545 (6.0%) were newborn and infant, 636 (7.0%) were preschoolers, 2,778 (%30.7%) were scholars, and 4,953 (%54.7%) were adolescence.

Of 9,057 patients, 1,185 (13.1%) patients were diagnosed with more than one skin disease. A total of 125 skin diseases were recorded.

Firstly, we evaluated the prevalence of skin disease of the patients. The most frequent diagnoses in all age groups and their prevalence were: acne (n=2,506; 27.7%), viral warts (n=1,231; 13.6%), contact dermatitis (n=1,195; 13.2%), xerosis cutis (n=730; 8.1%), seborrhoeic dermatitis (n=579; 6.4%), urticaria (n=560; 6.2%), bacterial infections (n=386; 4.3%), dermatophytosis (n=334; 3.7%), nevus (n=229; 2.5%), atopic dermatitis (n=226; 2.5%). Age distribution of the most common skin diseases is represented in Table 1.

There were statistically significant differences between female and male for acne, seborrhoeic dermatitis, and urticaria ($p<0.05$ for all). Acne, seborrhoeic dermatitis, and urticaria were more common in female pediatric patients than male (Table 2). Males showed a greater susceptibility to warts, bacterial infections, and dermatophytosis, whereas females were more susceptible to contact dermatitis, xerosis cutis, and nevus. But, there was no statistical difference ($p>0.05$ for all).The distribution of the most common ten diseases according to gender is shown in Table 2.

Secondly, we evaluated the prevalence of pediatric skin diseases for each age group.

I) In the newborn and infant group, the most frequent diagnoses were: atopic dermatitis (n=76; 13.9%), xerosis cutis (n=40 ; 7.3%), contact dermatitis (n=21; 3.9%), bacterial infections (n=19 ; 3.5%), urticaria (n=19; 3.5%), seborrhoeic dermatitis (n=16; 2.9%), intertrigo (n=14; 2.6%), nevi (n=10; 1.8%), milaria (n=6; 1.1%), pityriasis alba (n=3; 0.6%).

II) In the preschoolers group, contact dermatitis (n=250; 39.3%) was the most prevalent dermatoses, followed by xerosis cutis (n=161; 25.3%), urticaria (n=95; 14.9%), viral warts (n=88; 13.8%), atopic dermatitis (n=64; 10.1%), bacterial infections (n=62; 9.8%), molluscum contagiosum (n=42; 6.6%), seborrhoeic dermatitis (n=38; 5.9%), pruritus (n=26; 4.1%) and nail dystrophies (n=25; 3.9%).

III) In the scholars group (n=2,778), the most frequent diagnoses were: viral warts (n=620; 27.2%), contact dermatitis (n=460; 20.2%), xerosis cutis (n=304; 13.4%), acne (n=202; 8.9%), urticaria (n=196; 8.6%), seborrhoeic dermatitis (n=195; 8.6%), bacterial infections (n=113; 4.9%), nevi (n= 85; 3.7%), atopic dermatitis (n=63; 2.8%), alopecia areata (n=62; 2.7%).

IV) Among 4,953 cases, in the adolescence group, the top ten skin disorders were, in descending order of incidence, acne (n=2,297, 46.4%), viral warts (n=513 ; 10.4%), contact dermatitis (n=445 ; 8.9%), seborrhoeic dermatitis (n=330; 6.7%), xerosis cutis (n=225; 4.5%), bacterial infections (n=192; 3.9%),

urticaria (n=248; 5.0%), telogen effluvium (n=133; 5.0%), nevus (n=117; 2.4%), hyperhidrosis (n=104; 2.1%).

Thirdly, we have assessed the prevalence of disease groups. The rate and frequencies of the disease groups are represented in Table 3.

The most common skin disease in the age groups is as follows; Atopic dermatitis in the 0-2 age group (13.9%), acne vulgaris in the adolescence group (46.4%), viral warts in scholars group (22.3%) and contact dermatitis in the preschoolers group (39.3%) (Table 1).

Table 1: Age distribution of the most common skin disease.

No	Disease	Age groups: Infant (0-2 year) n = 545		Preschoolers (3-5 year) n = 636		Scholars (6-11 year) n = 2,778		Adolescence (12-17 year) n = 4,953		Total
		n	%	n	%	n	%	n	%	
1	Acne	2	0.4	5	0.8	202	7.3	2,29	46.4	2,506
2	Contact dermatitis	40	7.3	250	39.3	460	16.6	445	9.0	1195
3	Xerosis cutis	40	7.3	161	25.3	304	10.9	225	4.5	730
4	Viral warts	10	1.8	88	13.8	620	22.3	513	10.4	1,231
5	Urticaria	21	3.9	95	14.9	196	7.1	248	5.0	560
6	Seborrhoeic dermatitis	16	2.9	38	6.0	195	7.0	330	6.7	579
7	Bacterial infections	19	3.5	62	9.8	113	4.1	192	3.9	386
8	Dermato phytosis	9	1.7	52	8.2	92	3.3	181	3.7	334
9	Nevus	10	1.8	17	2.7	85	3.1	117	2.4	229
10	Atopic dermatitis	76	13. 9	64	10.1	63	2.3	23	0.5	226

Table 2: The distribution of the most common 10 diseases according to gender.

No	Disease	Gender: Male		Female		Total	
		n	%	n	%	n	%
1	Acne	1,067	11.8	1,439	15.9	2,506	27.7
2	Viral warts	637	7.0	594	6.6	1,231	13.6
3	Contact dermatitis	555	6.1	640	7.1	1,195	13.2
4	Xerosis cutis	360	4.0	370	4.1	730	8.1
5	Urticaria	241	2.7	319	3.5	560	6.2
6	Seborrhoeic dermatitis	193	2.1	386	4.3	579	6.4
7	Bacterial infections	217	2.4	169	1.9	386	4.7
8	Dermatophytosis	172	1.9	162	1.8	334	3.7
9	Nevus	97	1.1	132	1.5	229	2.5
10	Atopic dermatitis	127	1.4	99	1.1	226	2.5

Table 3: The rate and frequencies of the disease groups.

Diseases	n	%	Diseases	n	%
Infectious and parasitic diseases	**2,267**	**25.0**	**Bullous disorders**	**3**	**0.03**
Bacterial infections	386	4.7	Epidermolysis bullosa	3	0.03
Fungal infections	334	3.7	Pemphigus	0	0
Viral infections	1,526	16.8	Dermatitis herpetiformis	0	0
Parasitic infections	21	0.2	Bullous pemphigoid	0	0
Dermatitis and eczema	**2,237**	**24.7**	**Pigmentary disorders**	**191**	**2.1**
Contact dermatitis	1,195	13.2	Vitiligo	57	0.6
Atopic dermatitis	226	2.5	Pityriasis alba	76	0.8
Seborrhoeic Dermatitis	579	6.4	Postinflamatory hyperpigmentation	32	0.4
Nummular eczema	53	0.5	Ephelides	3	0.03
Neurodermatitis	21	0.2	Others	23	0.3
Nodular prurigo	2	0.02			
Pruritus	161	1.8			
Papulosquamous disorders	**234**	**2.6**	**Environmental disorders**	**123**	**1.4**
Psoriasis	112	1.2	Burn	11	0.1
Pityriasis rosea	103	1.1	Corns (Clavus)	88	1.0
Lichenoid dermatoses	14	0.2	Polymorphous light eruption	21	0.2
Pityriasis rubra pilaris	5	0.06	Ecchymose	3	0.03
Urticaria and erythema	**567**	**6.7**	**Vascular**	**24**	**0.3**
Urticaria	560	6.2	Pyogenic granuloma	20	0.2
Erythema nodosum	2	0.02	Hemangioma	4	0.04
Erythema multiforme	4	0.04			
Other erythematous conditions	1	0.01			
Genodermatoses	**6**	**0.07**	**Diseases of the oral cavity, salivary glands and jaws**	**39**	**0.4**
Neurofibromatosis	2	0.02			
Ichthyosis vulgaris	4	0.04			
			Recurrent oral aphthae	39	0.4
			Cheilitis	0	0
Skin disorders of the appendages	**544**	**6.0**	**Neoplasms**	**274**	**3.0**
Alopecia areata	116	1.3	Malign neoplasm	0	0
Rosacea	7	0.08	Benign neoplasm	274	3.0
Androgenic alopecia	33	0.4	Melanocytic naevi	229	2.5
Telogen effluvium	196	2.2	Other benign neoplasm of the skin	45	0.5
Hirsutism	9	0.1			
Hypertrichosis	9	0.1			
Hyperhidrosis	132	1.5			
Miliaria	42	0.5			
Acne	**2506**	**27.7**	**Xerosis cutis**	**730**	**8.1**
Nail disorders	**133**	**1.5**	**Not elsewhere classified**	**391**	**4.3**

Discussion

Among pediatric patients, the top three disease groups were, in descending order of incidence, acne (27.7%), infectious and parasitic diseases (n=2,267; 25.0%), dermatitis and eczema (n=2,237; 24.7%).

In a study by Colgecen et al. [3], acne (37.9%) was the most prevalent disease in the adolescence. In another prevalence study in which 10,115 subjects were included, acne vulgaris was reported with a rate of 17.82% (22). [4] In our study, the most frequent disease was acne (n=2506; 27.7%) which was also the

most frequent disease of the adolescence group (n=2297, 46.4%). The prevalence of acne was 11.8% - 25.2% (between the ages of 13 – 16 years) in previous studies conducted in Turkey (Table 4) [2]. Larsson and Liden [5] found the prevalence of acne 36.5% in the same age group. As a result of differences in patient selection and disease/patient classification, acne incidence shows variations among the studies. While most of the studies excluded 16-17 years old patients, in our study we included the patients who were younger than 18 years old.

Table 4: The rate of the disease in some previous studies among children in Turkey.

Disease	Present study, n=9,057[¥]	Ozcelic [4], n=10,115[¥]	Sacar [7], n=1,756[¥]	Can [6], n=850[¥]	Seckin [9], n=5,043[¥]	Colgecen [3], n=2,307[¥]	Akbas [2], n=4,025[¥]
Acne	2,506 (27.7)	1,803 (17.8)	66 (3.8)	30 (3.5)	796 (15.8)	472 (17.3)	279 (6.9)
Viral warts	1,231 (13.6)	1,015 (10)	148 (8.4)	37 (6.4)	-	- (11.2)	349 (7.8)
Contact dermatitis	1,195 (13.2)	1,071 (10.6)	78 (4.4)	102 (12)	366 (7.3)	194 (7.1)	626 (15.6)
Xerosis cutis	730 (8.1)	373 (3.7)	128 (7.3)	-	-	-	95 (2.4)
Urticaria	560 (6.2)	308 (3.0)	57 (3.2)	27 (3.2)	154 (3.1)	144 (5.3)	90 (2.2)
Seborrhoeic dermatitis	579 (6.4)	435 (4.3)	125 (7.1)	55 (6.5)	206 (4.1)	106 (3.9)	175 (4.3)
Bacterial infections	386 (4.7)	441 (4.4)	103 (5.9)	12 (1.4)	128 (2.5)	81 (3)	-
Dermatophytosis	334 (3.7)	436 (4.3)	46 (2.6)	31 (3.6)	195 (17.5)	88 (3.2)	-
Nevus	229 (2.5)	433 (4.3)	- (3.2)	25 (2.9)	122 (3.8)	46 (1.7)	-
Atopic dermatitis	226 (2.5)	408 (4.0)	140 (8)	110 (39.5)	665 (13.2)	172 (6.3)	318 (7.3)

[¥]:(n (%))

Akbas et al. [2] assessed that the prevalence of acne in the female (61%) was more frequent than male (39%). They found that there was a statistically significant difference between female and male pediatric patients [2]. Regarding the prevalence of acne, a female dominance (57.4%) was found in our study and it was also statistically significant.

Not surprisingly, the prevalence of acne was 0.2% (n = 1) in newborn and infant group, which increased with age and reached 46.4% in the adolescence group.

The prevalence of infectious and parasitic diseases was 25.0% in our study. It was similar to other studies from Turkey. In the previous studies from Turkey, the prevalence of infectious and parasitic diseases were found with a rate of 25.8% by Colgecen et al. [3], 13.4% in the study by Can et al. in Istanbul [6], 20.6% by Sacar et al. [7], 27.9% by Kacar et al. [8] , and also Seckin et al. 22% [9] in Tokat. Our result was not different from these results. Infectious diseases were reported to be the most commonly observed disease group with a rate of 11.4% in Northern India. [10] Again, Sardana et al. [11] was reported that the most commonly observed disease group (47.15%) among all subjects in the India. Additionally, infectious diseases were reported to be the most commonly observed disease group in the Ethiopia and Brazil [12-13]. Previous studies conducted in Ethiopian and Brazilian, parasitic infestations were found most commonly in children. [12-13] Crowded environments, inadequate hygiene, and low socioeconomic level may be the reason for the high frequency of infectious diseases in underdeveloped or developing countries.

Viral infections constituted the most commonly observed infectious skin diseases, similar to our study. This finding may be explained by reason of the fact that infectious skin diseases can easily be transmitted in crowded settings. [14]

Warts (13.7%) was the most common viral infection. The peak age group for warts was in the school age group (22.3%). There was statistically no significant difference between male (48.3%) and female (51.7%). Warts have a high prevalence in most studies, ranging from 4.6% to 17.5% [2,3,6-9]. Viral warts were found with a rate of 8.7% in the study of Akbas et al. [2] , with a rate of 11.2% in the study of Colgecen et al. [3] , with rate of 6.4%, in the study of Can [6] , with rate of 8.4% in the study of Sacar et al. [7] , with rate of 17.8% in the study of Kacar et al. [8] , and with rate of 12.1% in the stud of Seckin et al. [9] .

The most frequent diagnoses in dermatitis and eczema group were contact dermatitis. Contact dermatitis was more common in preschoolers and school groups than newborn, infant and adolescence groups. Contact dermatitis was 53.6% (n=640) in female and it was 46.4% in male. This result corresponds with findings of some similar studies [2, 9, 15-18] in Turkey. Heine et al. [19] assessed that the rate of sensitization in children and adolescents was similar to adults, increased contact with allergic or irritants substances with increasing age may be reason for the increased frequency found in preschoolers and school groups age groups.

Colgecen et al. [3] reported that atopic dermatitis occurred more frequently in infant and newborn and the prevalence was decreasing with the increasing age. Similarly, atopic dermatitis (13.9%) was the most common skin disease among the infant and newborn group in our study. It was less frequent in school (2.3%) and adolescence groups (0.5%). A male-to-female sex ratio of 1.28:1 was found in atopic dermatitis. The prevalence of this disease in the Turkish pediatric patients was found between 6.3% and 13% [3, 6, 9, 15].

There are some limitations in our study. The study was conducted in only one hospital. This is limiting the generalisability of the results. Another limitation of our study is the reliance on clinical records and not direct diagnosis.

In conclusion, acne, viral warts, and contact dermatitis were the three most common skin diseases that we detected in Eskisehir in pediatric population. In order to reveal the prevalence of pediatric skin diseases, further epidemiological studies are needed.

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