

A study of skin diseases in Tunis. An analysis of 28,244 dermatological outpatient cases

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ABSTRACT

Background: Epidemiological studies of skin diseases are rather rare. Most of them are based on hospital attendance. The aim of this study was to determine the spectrum of skin diseases in the Tunis region.

Methods: This prospective study encompasses consecutive patients attending a number of public or private dermatological outpatient clinics in Tunis from June 1999 to July 2000. Diagnosis was mainly based on clinical findings, but supplemented by further investigations when needed.

Results: The total number of patients was 28,244, with 28,515 pathological conditions reported. The mean age was 31.6 years with a M/F sex ratio of 0.82:1. Infections constituted the major group of disorders (38.6%), followed by hair follicle and sebaceous gland diseases (14.3%), allergic skin diseases (13.6%), and tumors (7.8%). Infectious diseases included fungal (16.38), viral (9.9%), and bacterial (9.24%) conditions. Dermatitis accounted for 9.9% of cases and acne for 6.9%. Tumors were mainly benign (7%) and very rarely malignant (0.5%).

Conclusions: The survey revealed that more than 50% of the diseases were of infectious origin, followed by hair follicle and sebaceous gland disorders. Socioeconomic status and environmental factors may be responsible for this.

KEY WORDS

skin diseases,
profile,
epidemiology,
Tunisia

Introduction

Skin diseases are frequently seen. The evaluation of their prevalence among a population and the costs of treatment are essential for the development of strategies that aim to eradicate or at least reduce the problem. Although literature on specific skin disorders is very abundant, there are relatively few reports on the

spectrum of skin diseases in various populations (1–13). In addition, most studies of the incidence and prevalence of skin diseases are based on hospital attendance (3–13).

Consequently we decided to study the spectrum of skin diseases in outpatients attending certain private and

public outpatient dermatological clinics in Tunis and to compare our findings with the data in the literature.

Tunisia is a Mediterranean country situated in northern Africa with an area of about 164,000 km² and an estimated population of 10 million people. It is bordered on the north and east by the Mediterranean Sea, and in the west it borders Algeria and in the south Libya. Tunis, the capital, has 2 million inhabitants and represents approximately 20% of the country's total population.

In 1999 there were 150 dermatologists in Tunisia, 85 of whom were practicing in the capital.

Patients and method

Our investigation was carried out over a one-year period (from June 1999 to July 2000) by 12 volunteering dermatologists, among them 5 office-based private dermatologists and 5 working at one of the two teaching hospitals – Charles Nicolle Hospital (3 dermatologists) and Mongi Slim Hospital (2 dermatologists) – or at a primary health center in Tunis (2 dermatologists). All new cases of skin diseases (i.e., cases seen for the first time in the various dermatological outpatient clinics) were prospectively reviewed. The clinical data collected included age, sex, and diagnosis. Diagnosis, when indicated, was supported by histology or other investigations.

The skin diseases were classified according a classification used at the Dermatology Department of Charles Nicolle Teaching Hospital. This classification was based on etiologic and morphological criteria and comprised 12 principal groups (Table 1). Our findings were compared with studies from other parts of the world.

Results

During the 12 months, 28,244 patients presented for a dermatological consultation and 28,815 pathological

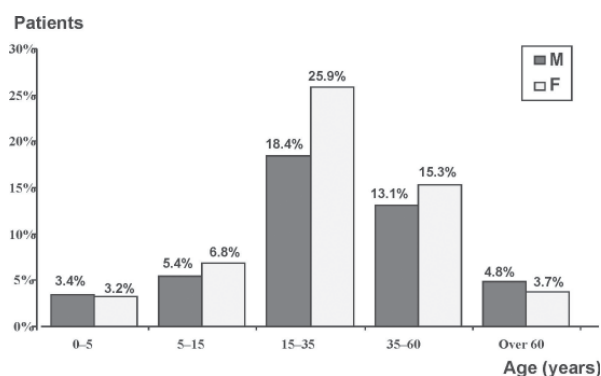


Figure 1. Patient distribution by age and sex.

Table 1. Frequencies and types of skin disorders observed.

Skin disorders	Cases (n)	Percent. in group	Percent. of total cases
1. Infections	11,13	–	38.60
Fungal	4,722	43.80	16.38
Viral	2,845	26.40	9.90
Bacterial	2,664	23.90	9.24
Parasitic	937	21.10	3.25
Sexually transmitted diseases	528	4.70	1.83
2. Hair follicle and sebaceous gland disorders	4,016	–	14.30
Acne	1,979	49.30	6.90
Hair loss	884	22.00	3.04
Alopecia areata	468	11.65	1.60
Other	685	17.10	2.40
3. Allergic disorders	3,917	–	13.60
Eczema	2,642	67.50	9.20
Atopic dermatitis	209	5.30	0.72
Urticaria	536	13.70	1.90
Prurigo	470	12.70	1.70
Other	60	1.50	0.20
4. Tumors	2,237	–	7.80
Benign tumors	2,028	90.70	7.00
Premalignant tumors	36	1.60	0.10
Malignant tumors	133	5.60	0.50
5. Keratinization disorders	1,555	–	5.40
Psoriasis	979	63.00	3.40
Corns	283	18.20	0.80
Keratoderma	136	8.70	0.50
Other	157	10.10	0.54
6. Pigmentary disorders	1,349	–	4.70
Hyperpigmentation	1,016	75.30	3.50
Hypopigmentation	333	24.70	1.10
7. Vascular disorders	497	–	1.70
Leg ulcer	151	30.40	0.60
Purpura	75	15.10	0.26
Phlebitis	11	2.20	0.04
Arteritis	7	1.40	0.02
Other	58	38.40	0.20
8. Drug reactions	191	–	0.70
9. Autoimmune disorders	142	–	0.50
Connective tissue diseases	109	76.60	0.40
Bullous disorders	33	23.40	0.10
10. Genodermatoses	65	–	0.22
11. Metabolic disorders	13	–	0.04
12. Miscellaneous	3,557	–	12.30
Total	28,82	–	100.00

conditions were diagnosed. This discrepancy in figures resulted from the fact that some patients presented with

Table 2. Distribution of the most prevalent dermatoses by age group.

Dermatoses	AGE				
	0-5	5-15	15-35	35-60	60+
Allergic dermatoses	406	391	1,497	1,241	382
Bacterial dermatoses	224	229	929	681	211
Hair follicle and sebaceous gland disorders	115	532	2,849	555	55
Keratinization disorders	79	205	494	600	207
Mycoses	166	466	1,960	1,702	428
Parasitic infections	129	144	398	203	63
Pigmentary disorders	25	68	804	417	35
Tumors	92	146	859	828	311
Viral infections	372	716	1,050	551	156
Total	1,896	3,504	12,769	8,185	2,455

more than one dermatological and/or venereal problem on consultation. Patients recorded at the different outpatient clinics attached to hospitals accounted for 15,062, whereas 13,753 patients were seen at private outpatient clinics.

Females accounted for 54.9% and males for 45.1% of patients. The mean age was 31.6 years (ranging from 5 months to 98 years). About 45% of patients were in the 15 to 35 age group. Figure 1 shows the patient distribution by age and sex. Of all diseases, skin infections topped the list (38.6%), followed by hair follicle and sebaceous gland disorders (14.3%) and allergic diseases. A detailed distribution of the various skin diseases is shown in Table 1.

The frequencies of dermatoses affecting the various age groups are shown in Table 2. Some sex differences were noted, particularly in leg ulcers (sex ratio M/F = 4.8) and pigmentary disorders (sex ratio M/F = 0.22) (see Table 3).

Fungal infections prevailed within the skin infection group. Dermatophytoses were the most common superficial fungal infection (66.2%), and included mainly toe-web intertrigo and onychomycosis, as shown in Table 4. Tinea versicolor (898 cases) came next, followed by Candida infection (414 cases). No cases of deep mycosis were seen.

Warts topped the list of viral infections with 1,770 cases, followed by molluscum contagiosum (395 cases), herpes zoster (230 cases), herpes simplex (127 cases), and varicella (83 cases).

Bacterial infections were mainly represented by furuncles (442 cases), erysipelas (397 cases), and impetigo (314 cases). Cutaneous tuberculosis was rare (7 cases). One case of leprosy was noted in a 46-year-old man. Scabies (775 cases) was the most frequent parasitic affection, followed by pediculosis (97 cases) and cutaneous leishmaniasis (63 cases).

Sexually transmitted diseases (STDs) accounted for

4.7% of infectious diseases and 1.83% of the total number of cases; they were mainly represented by urethritis (44.2%) and genital warts (34.3%). Syphilis (24 cases) accounted for 4.5% of sexually transmitted diseases and generally presented as seropositive syphilis.

Acne, hair loss, and alopecia areata were quite frequent, especially in young females, and together constituted 81.1% of sebaceous hair follicle disorders and 11.6% of all disorders seen. Acne accounted for 6.9% of all skin disorders.

Eczema was the most common allergic disease (67.5%) and accounted for 9.1% of all skin diseases, whereas atopic dermatitis was uncommon (0.72%). Urticaria was observed in 1.9% of all cases. The frequencies of acute and chronic urticarias were similar, at 51.9% and 47%, respectively.

Cutaneous tumors accounted for 7.8% of total cases. They were generally benign, mainly consisting of epidermoid cysts and acrochordons. Basal cell carcinoma (90 cases) and squamous cell carcinoma (26 cases) were the most common malignant tumors. Two cases of plantar melanoma were noted in two male patients ages 61 and 77, respectively.

Psoriasis was the most common keratinization disorder (63%). Melasma was the most common pigmentary disorder (882 cases), followed by vitiligo (270 cases). Leg ulcer (151 cases) was the most common vascular disorder. Primarily young men were affected, with a M/F sex ratio of 4.8 and a median age of 46.3 years.

Lupus erythematosus topped the list of connective tissue diseases (64.2%) and was mainly represented by discoid lupus (67.1%). Pemphigus (27.3%) and pemphigoid (21.2%) were the most common among vesiculobullous auto-immune disorders.

Genodermatosis accounted for 0.22% of all diseases seen; diagnoses included ichthyosis (30 cases), neurofibromatosis (18 cases), and xeroderma pigmentosum (8

Table 3. Skin disorder frequencies by sex.

Skin disorders	Cases (n)		Percentage in group	
	F	M	F	M
1. Infections	5,329	5,796	47.9	42.1
Fungal	2,533	2,189	54.5	55.6
Viral	1,452	1,212	54.4	45.6
Bacterial	1,007	1,267	44.3	55.7
Parasitic	361	576	38.5	61.5
Sexually transmitted diseases	204	324	37.7	62.3
2. Hair follicle and sebaceous gland disorders	2,812	1,293	68.5	31.5
Acne	1,468	511	74.2	25.8
Hair loss	697	276	71.6	28.3
Alopecia areata	191	207	48.0	52.0
Other	192	276	41.0	59.0
3. Allergic disorders	2,181	1,736	55.7	44.3
Eczema	1,418	1,224	53.7	46.3
Atopic dermatitis	105	104	50.2	49.8
Urticaria	325	211	60.6	39.4
Prurigo	309	190	61.9	38.1
Other	17	13	56.7	43.3
4. Tumors	1,103	1,134	49.3	50.7
Benign tumors	1,018	1,009	50.2	49.8
Premalignant tumors	15	21	41.7	58.3
Malignant tumors	70	103	40.5	59.5
5. Keratinization disorders	823	762	51.9	48.1
Psoriasis	467	512	47.7	52.3
Corns	154	129	54.4	45.6
Keratoderma	58	78	42.6	48.4
Other	94	63	60.0	40.0
6. Pigmentary disorders	1,102	247	81.7	18.3
Hyperpigmentation	918	98	90.3	0.7
Hypopigmentation	184	149	60.7	39.3
7. Vascular disorders	202	295	40.9	59.1
Leg ulcer	26	125	17.2	83.8
Purpura	44	31	58.7	41.3
Phlebitis	3	8	27.3	72.7
Arteritis	0	7	0.0	100.0
Other	30	28	51.7	48.3
8. Drug reactions	109	82	57.1	42.9
9. Autoimmune disorders	111	31	78.2	21.8
Connective tissue diseases	86	23	79.0	21.0
Bullous disorders	25	8	38.5	61.5
10. Genodermatoses	22	13	62.9	37.1
11. Metabolic disorders	5	8	38.9	61.1
12. Miscellaneous	1,644	1,301	56.6	43.4
Total	15,828	12,99	—	—

cases). Miscellaneous skin conditions were diagnosed in the remaining patients (10.1%) and were generally represented by pruritus (1.7%).

Discussion

This study is the first publication describing the spectrum of skin diseases in outpatients attending various private and public dermatological clinics in the Tunis region for a first consultation.

A review of the literature revealed few reports on the spectrum of skin diseases in the general population. Most of them were hospital-based studies, and only two reports mention using an approach similar to the one we have used (1, 2).

By studying both private clinic and hospital attendance, we tried to avoid the biased recruitment observed in hospital-based surveys, in which the cases considered are usually difficult to diagnose and refractory to treatment. The one year duration seemed sufficient to eliminate any seasonal bias that could possibly distort the nature of the lesions.

On the other hand, our investigators could not be randomly selected. The dermatologists taking part in this study agreed to comply with a certain number of constraints. Indeed, it was necessary that these investigators devote a considerable amount of time to the investigation. (Moreover, these dermatologists allowed us to share their activities, which may be regarded as confidential by some, for an entire year).

Infections were the most frequent skin disorders, accounting for more than a third of the total, an observation similar to reports from other African countries (3–9). A closer analysis of the infectious diseases shows that fungal diseases were predominant. Their incidence is comparable with incidences from other countries (4, 9, 10).

Table 4. Pattern and frequencies of fungal skin diseases.

Disease group	Cases (n)	Percentage in group	Percentage of total cases
Dermatophytoses (localization)	3,126	—	66.20
Toe-web intertrigo	1,198	38.2	4.15
T. unguium	774	24.8	2.70
T. cruris	273	8.7	0.94
T. corporis	206	6.6	0.70
T. capitis	675	21.7	2.30
T. versicolor	898	—	3.11
Candida infection	414	—	1.43
Ungual candidiasis	222	70.7	0.77
Mucocutaneous candidiasis	192	29.3	0.66
Other	384	—	1.33
Total	4,722 (4822)	—	100.00

The high prevalence of these diseases may be explained by Tunisian climatic conditions (heat, humidity) and some social practices such as communal bathing in Turkish baths. The increased numbers of people frequenting swimming pools and practicing sports, especially during recent years, may also have contributed to this high prevalence. The distribution frequency of the various fungal species (see Table 4) is similar to that reported in other countries (9, 11).

The number of bacterial infectious diseases has dramatically decreased in Tunisia compared to previous unpublished statistics (12). This may be an index of the improved quality of life and better hygiene standards. However, the incidence of these disorders is probably underestimated because they are usually easily recognized and are not referred to a dermatologist. The prevalence rate of warts was higher than that reported in other studies (1, 3, 8, 13).

Few data are available on STDs in dermatological clinics. The general trend is comparable to the data from the literature showing a predominance of gonococcal or non-gonococcal urethritis and genital warts (5, 6). The absence of cases of HIV infection in our study may be due to the fact that affected people are more likely to be referred to specialized STD centers.

Advanced industrialization may explain the high prevalence of industrial dermatitis and allergic contact dermatitis. The frequency of eczema in our study is apparently lower than that reported in other countries such as Canada (39.2%) and others (1, 2, 9–11, 14). Advanced industrialization may explain the high prevalence of industrial dermatitis and allergic contact dermatitis in such communities. The frequency of atopic dermatitis is also lower than that reported in other countries, where it constitutes a real health problem (2, 5, 6).

Skin disorders with esthetic impacts such as acne, hair loss, and pigmentary disorders are common. Acne

was the second most common skin disorder. This may reflect an increased consciousness of self-image and the ready availability of medical services.

Racial and cultural differences may explain the low prevalence of skin malignancies compared to data from Western countries (1, 2, 8). Most of our patients have dark complexions, which provide efficient protection from sunlight. In addition, in spite of living in a sunny Mediterranean region, people in Tunisia wear clothing that provides good sun protection and do not have the habit of sunbathing during their leisure time. Differences in skin disorder distribution between private and public outpatient clinics patients are similar to data in the literature (1, 2). The higher frequency of sexually transmitted diseases seen at private practices may be due to greater confidentiality. The lower frequency of tumors at private clinics may be due to the fact that patients with a suspected tumoral lesion are more likely to be referred or self-referred to hospitals attached to clinics mainly because of the treatment costs.

We believe that this review provides useful information about the prevalence of dermatological disorders in patients seeking medical advice at specialized dermatologic clinics. It is hoped that this study of the spectrum of skin diseases will contribute to proper health care planning and the establishment of appropriate educational and research programs tailored to Tunisia's environment.

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