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Research Article

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Seborrheic Dermatitis in Black Skin: Epidemiological and Clinical Aspects, Evolution, And Associated Factors In 111 Patients with Review of the Literature

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Abstract

Introduction

Seborrheic dermatitis (SD) is a chronic, recurrent dermatosis. In Africa, studies on seborrheic dermatitis are very rare.

Objective

Our aim was to determine the epidemiological and clinical aspects and factors associated with SD in black-skinned adults in Dakar.

Material and Methods

Cross-sectional, analytic study with prospective data collection, conducted from April 1st to September 30th of 2018, in Dakar's two dermatology referral departments and one dermatology consultation unit.

Results

We enrolled 111 patients, representing a hospital frequency of 1.6%. The mean age of patients was 33 years, with a sex ratio of 0.2. Singles accounted for 54% and married for 42% of cases. Pupils or students accounted for 32% and housewives for 28%. Stress was present in 40.54% of cases, systemic disease in 23.42% and atopy in 21.62%. Pruritus was absent in 53%. Scaling was found in 88% (n=98) of cases. The scalp was affected in 83.78% and the face in 47%. Acne was noted in 14.4%. HIV serology was negative in 97% (n=108) of patients who tested positive. There was a statistically significant relationship between scalp localization and factors such as stress (p=0.034), female gender (p= 0.023), married status (p=0.021) and the existence of a systemic disease (p=0.048). Facial localization was related to male gender (p=0.0204).

Conclusion

SD is relatively common in skin of color adults in Dakar. Women are mainly affected. Factors associated with this condition include psychosocial status and systemic diseases.

Keywords: Seborrheic Dermatitis, Skin of Color, Systemic Diseases, Stress

1. Introduction

Seborrheic dermatitis (SD) is a chronic, recurrent dermatosis. It is characterized by erythematous patches and greasy scales in areas of maximum sebaceous activity [1]. Its prevalence is estimated between 1% and 10% in adults [2]. Men are more affected than women, with peak incidence in the third and fourth decades of life [3]. The prevalence is more significant in association with some diseases, such as HIV infection, Parkinson's disease, depressive syndromes, and iatrogenic extrapyramidal syndromes, as well as in chronic alcoholics and patients treated for carcinoma of the upper aerodigestive tract [4-7]. SD is worsened by emotional stress and improves spontaneously in summer [8].

The pathophysiology of SD is currently a controversial subject [9]. The role of sebum is thought to be to promote the proliferation of a lipophilic skin yeast of the genus Malassezia [8-12]. In addition, the integrity of the epidermal barrier, the host's immune response, neuro-endocrine and nutritional factors

all play a role in individual susceptibility, which has a genetic basis [13,14]. Diagnosis of SD is based essentially on clinical examination; biopsy or other biological tests are not necessary [10]. There is yet no consensual treatment, but antifungal agents are the mainstay of therapy [15]. In sub-Saharan Africa, few studies have been carried out on seborrheic dermatitis. We therefore conducted this study to determine the epidemiological, clinical aspects, evolution and factors associated with seborrheic dermatitis in black-skinned adults in Dakar.

2. Patients and Methods

This was a cross-sectional, multicenter study with prospective data collection, conducted over a 6-month period (April 1st to September 30th, 2018) The study was carried out at the dermatology departments of the Institut d'Hygiène Sociale de Dakar and Centre Hospitalier Universitaire Aristide Le Dantec hospitals, and at the dermatology consultation of the Clinique des Maladies Infectieuses at Hôpital Fann. The first two sites are the two university reference centers for dermatology in Senegal, and the third for infectious pathologies. Our study population included all adult patients who had visited the above-mentioned sites during the period. All consenting patients aged 18 or over with erythematous and/or scaly patches on the mid-face, external auditory canal, axilla, or perineum were included. On the scalp, there were small, non-adherent scales forming a dandruff-like condition, or a shiny, scaly helmet enveloping the hair.

Patients with erythematosquamous patches caused by psoriasis, eczema, erythrasma or other superficial mycoses (dermatophytosis and candidiasis) were not included. Scalp mycological sampling was only requested in cases of doubt. A data collection form was used to record epidemiological, clinical, paraclinical, therapeutic and evolutionary variables. The data were entered into Excel 2016 and statistical analysis was carried out using Epi-info 7 software. Chi-square or Fisher tests were used to compare proportions, with a significance threshold if p less than 0.05. The strength of the association was assessed by the Odds Ratio (OR) with a 95% Confidence Interval.

3. Results

Over a 6-month period, we recorded 111 cases of SD in a population of 6330 patients. The hospital incidence rate was 1.6%. Our patients were 84% female (n=93), giving a sex ratio of 0.2. The mean age of patients was 33 years, with extremes of 18 and 66 years. The median age was 31 years. The 18 to 48 age group accounted for 90% of patients. Pupils and students represented 32% (n=35) of patients, and housewives 28% (n=31).

The patients were single in 54% (n=61), married in 42% (n=47) and divorced in 3% (n=3). Children were present in 44% of cases. The number of children ranged from 1 to 8, with an average of 2.50 children. Previous episodes of seborrheic dermatitis were reported in 68% (n=76) of patients. Psychosocial events (Table I) were reported by 50.45% (n=56) of patients. A notion of stress was found in 40.54% (n=45) of patients, including 35.55% (n=16) of pupils and students. Table II shows the distribution of patients according to socio-professional category and stress.

Patients had one or more background (Table III) in 59.54% (n= 66) of cases. Pruritus was reported by 47% (n=52) of patients and was moderate in 55.8% (n=29). Scaling was found in 88% (n=98) of patients, and erythema in 30.6% (n=34). Scalp topography (Table IV) was noted in 83.78% (n=93) of patients and was isolated in 52% (n=58). A profuse form (fig1) was present in 1.8% (n=2) of patients. One was depressive and the other atopic. HIV serology was negative in all 96.4% (n=107) of patients who underwent it. In no case was SD the reason for the discovery of HIV infection.

Mycological sampling was requested in 46.55% (n=27) of the 52% (n=58) of patients with isolated scalp SD and was negative in the 11 patients who had it performed. In bivariate analysis (Table V), isolated scalp involvement was associated with stress (p=0.03), female gender (p=0.02) and married status (p=0.02). Similarly, isolated facial involvement (fig 2 and 3) was associated with male gender (p=0.04) and unmarried status (P=0.01).

Treatment (Table VI) was prescribed for all patients. Local antifungal therapy was prescribed in all cases and combined with a systemic antifungal agent in the 2 patients with a profuse form of the disease. Dermocorticoids were prescribed in 50.4% (n=56) of patients. Refusal of treatment was noted in 10% (n=11) of patients. Progress after 4 weeks of treatment could only be assessed in 68% (n=68) of patients who had kept the appointment. It was favorable in 92.64% (n=63) and stationary in 7% (n=5). Progression at 3 months, assessed in 60% (n=60) of patients, was favorable in 90% (n=54), and was marked by relapse in 10% (n=6).

4. Discussion

To carry out our study, we had recruited patients presenting with seborrheic dermatitis seen at the Dermatology Departments of the Aristide Le Dantec and Institut d'Hygiène Sociale Hospitals in Dakar, and at the Dermatology consultation of the Infectious Diseases Department at Fann Hospital. During the study period, 6330 patients were seen in dermatological consultations, representing a hospital frequency of 1.6%. This is lower than the 8.5% reported by Neji et al [16] in Tunisia. Similarly, in Japan, a 2004 study of 67,448 patients showed a SD prevalence of 3.28%, compared with 4% in the USA [4]. In Australia, the prevalence is 6.9% in adults aged over 20 [17]. These results show great variability in the prevalence of SD according to geographical area. This variability in the data is thought to be linked to the absence of standardized clinical diagnostic criteria for SD [17]. In sub-Saharan Africa, the low prevalence rate is also thought to be due to the population's low attendance at health facilities, for benign pathologies. Regarding age, the 18 to 48 age group, which accounted for almost all our patients, is reported in the literature with a peak frequency of SD between the ages of 18 and 40 [4]. This young age may be explained by androgenic stimulation, which plays an important role in the seborrhea involved in the pathophysiology of SD [8,10]. One hypothesis is that Malassezia produces a lipase that transforms sebum triglycerides into free fatty acids, such as oleic and arachidonic acids, which induce inflammation in immunologically predisposed individuals [18-21]. The strong inflammatory response triggered by these

metabolites includes infiltration of Natural Killer (NK) cells and macrophages, with concomitant local complement activation and increased production of inflammatory cytokines, such as interleukins (IL-1α, IL-1β, IL-2, IL-4, IL-6, IL-8, IL-10, IL-12, IL17) and TNF-α [22-24] in affected skin areas [13]. The Malassezia genus includes over 14 species of fungi, but the most commonly associated with SD are M. globosa, M. restricta, M. furfur, M. sympodialis, M. obtuse, M. slooffiae and M. arunalkei [11, 19]. M. restricta and M. globosa are probably the most virulent species, producing large quantities of oleic acids, mainly leading to activation of IL-8 and 17 [20]. A recent study showed that the M. globosa species possesses a gene, LP1, whose expression enables it to produce a lipase [24]. The involvement of genetic factors in seborrheic dermatitis is also increasingly recognized. Genetic predisposition is thought to result from mutations in several genes involved in the immune response and the regulation of sebum secretion. Mutations such as ACT1, C5, NEMO, STK4 and ZNF750 have been identified as being associated with seborrheic dermatitis [20].

In terms of gender, women made up more than four-fifths of our sample. These results contrast with the literature, which shows a clear male predominance. In the study by Misery et al [25], men accounted for more than half (56%) of their workforce. In Spain, the study by Pyeri et al [26] included men in over half the cases. In Korea, Park et al [27] showed that adult SD occurred in 57.26% of males. The predominance of females in our series may be explained, in part, by the aesthetic impact of SD [27], which is more likely to prompt women to consult a specialist. The fact that more than half of our patients were single, and that almost a third were students, may support this hypothesis.

In terms of promoting factors, in half cases, a psychosocial event prior to the onset of SD was noted, and stress accounted for over 80% of these events. In Korea, Park et al [27] have clearly demonstrated the role of stress in the onset of SD and its relapses. Similarly, the Spanish study by Peyri et al [26] found stress in 76.6% of their patients. Misery et al [25], and Park et al [27] have shown that a stressful event often precedes the onset of SD crisis, and that the role of stress is a negative prognostic factor [25]. Stress is thought to weaken the immune system and increase inflammation [28]. In our sample, this stress was mainly found in those with isolated scalp involvement (p=0.02). This topography of SD was found in over 80% of our patients, as described in the literature [29,30]. Scalp involvement was most common in women (p=0.02) and married men (P=0.03). In these patients, the differential diagnosis of SD was essentially tinea capitis. However, all mycological tests carried out on the scalp were negative.

As other factors, 5 (4.5%) of our patients were smokers and 4 (3.5%) were alcoholics. Our results are lower than the frequencies of 9.9% and 22.9% respectively found by Park et al [27]. This discrepancy could be explained by the cultural and religious background of our patients. However, alcohol and tobacco are risk factors for the onset of SD, clearly identified by Missy et al [31]. Table VII compares the frequencies of our risk factors with those of various authors. The association of SD with other conditions, such as systemic diseases, diabetes, hepatitis B, hypertension, and atopy, is difficult to interpret. Systemic diseases were found in a fifth of our patients. This association is rarely reported in the literature. The frequency of these systemic diseases in our patients could be explained by the state of immunodepression associated with the disease or the immunosuppressive drugs prescribed on a long-term basis.

In our study, 3 patients were diabetic and 3 were hypertensive, 2.60% each. The association between hypertension and SD was reported by Linder et al, in 2013 [32]. In opposition, a Turkish study by Imamoglu et al [33] in 2016 reported only 14.9% cases of hypertension in 47 adults with SD. The young age of our patients could be one of the reasons for the low frequency of these defects in our study.

Atopy, found in a fifth of our patients, was reported in only 10.3% by Pyeri et al [26]. The clinical, epidemiological, and pathophysiological features of these two conditions distinguish them from one another [34]. However, it is currently recognised that Malassezia can, through direct or indirect production of allergens, stimulate keratinocytes and dendritic cells to induce significant secretion of cytokines (TNF-α, IL-6 and IL-10) which may be involved in inflammation in patients with atopic dermatitis [35].

The 2.60% frequency of HIV infection in our patients is lower than seen in the literature from sub-Saharan Africa. In Benin, Yedmon et al [36] had found 16% seropositivity in their patients with SD. The discrepancy in our results could be explained by the low prevalence (0.5%) of HIV infection in Senegal, according to the 2017 Demographic and Health Survey [37]. However, the prevalence of seborrheic dermatitis ranges from 20% to 83% in HIV-infected individuals [38]. Indeed, studies have shown that Malassezia density is higher in the skin of HIV-infected patients than in uninfected controls [39]. This high Malassezia colonization of the skin in this population can be explained by the lower CD4 lymphocyte count, which is also a factor of severity [40].

More than half of our patients had no pruritus. In the systematic review by Sampaio et al [4], on SD, this sign was missing in the majority of cases. Scaling, which characterizes SD, was found in almost 90% of our patients. As for erythema, which is more difficult to see on darker skins, it was only noted in 30.6% of our patients. On black skin, erythema is less distinct and often replaced by hypopigmentation; which generally improves with treatment and is thought to result from inhibition of melanocyte tyrosinase and pigment production by Malassezia metabolites [41].

Almost all patients were treated with local antifungal agents. In the study by Pyeri et al [26], the use of classical antifungals was less frequent (only 35%). On the other hand, the use of dermocorticoids in half of our patients is reported by the same authors. This discrepancy is due to the greater use of calcineurin inhibitors, selenium sulfide and pyrithione derivatives in this Spanish study [26].

Systemic (oral) antifungal agents were used in only 2 of our patients with diffuse SD, matching with the literature [42]. The favorable outcome in 90% of our patients, after one-month treatment, is similar to the results of Ratnavel et al [43]. In the study by Chosidow et al. only half of patients showed a favorable outcome [44].

After 3 months treatment, the majority of the 54% (n=60) of patients who were reviewed had a favorable outcome. The relapses noted in 10% of these patients were due, on the one hand, to poor therapeutic compliance and, on the other, to financial exhaustion. In the literature, this repetition is often punctuated by several factors. The most frequently reported are the climate changes (summer in tropical zones, winter in temperate zones) [45-47], stress, depression, and asthenia [45].

Psychosocial events	Headcount (n)	Percentage (%)
Stress	45	40,54
Death of a loved one	25	23
Relationship conflict	23	20,72

Table 1: Distribution of patients according to psychosocial events prior to the onset of SD

Socio-professional categories	Headcount/percentage N (%)	Stress N (%)
Student	35 (32)	16 (45,7)
Housewife	31 (28)	11(35,5)
Official	20 (18)	7 (35)
Retailer	13 (12)	6 (46)
Other	12 (11)	5 (41,6)

Table 2: Distribution of SD patients according to socio-professional categories and stress

Background	Headcount (n)	Percentage (%)
System autoimmune disease	26	23,42
Atopy	24	21,62
Artificial depigmentation	10	9
Tobacco	5	4,5
Alcoholism	4	3,60
Depression	4	3,60
HIV infection	4	3,60
Diabetes	3	2,70
Hypertension	3	2,70
Drugs	3	2,70
Hepatitis B	3	2,70
Pregnancy	1	0,90

Table 3: Distribution of patients with SD according to the type of background found

Topography	Headcount	Percentage
Scalp	93	83,78
Face	52	47
Trunk	4	3,60
Neck	1	0,90
Armpit	1	0,90
Umbilicus	1	0,90
Inguinal fold	2	1, 80
External genitalia	1	0,90
Intergluteal folds	3	2 ,70

Table 4: Distribution of SD patients according to the topography of lesions

SD locations / Associated factors		Isolated scalp	Scalp + other topographies	P-value	OR	95% CI
Stress	Yes	29	16	0.03638	2.313	1.06-5.046
	No	29	37			
Gender	Female	53	40	0.02661	3.407	1.145-11.43
	Male	5	13			
Marital status	Married	30	16	0.02327	2,457	1.128-5.466
	Unmarried	28	37			
		Isolated face	Face + other topographies	P-value	OR	95% CI
Gender	Male	6	12	0.04983	3.727	1.163-11.94
	Female	11	82			
Marital status	Unmarried	15	50	0.01081	6.5	1.392-61.83
	Married	2	44			

Table 5: Relationship between associated factors and SD locations in 111 patients

Route of administration	Molecules	Galenics	Headcount (n)	Percentage %
Local	Ketoconazole	Shampoo	51	46
		Cream	20	18
	Ciclopiroxilamine	Lotion	34	30.6
		Cream	16	14.4
	Clotrimazole	Cream	1	0.9
	Terbinafine	Cream	2	1.8
	Isoconazole	Cream	8	7.2
	Econazole	Lotion	5	4.5
		Cream	1	0.9
General	Fluconazole	Tablet	2	1.8

Table 6: Distribution of SD patients according to antifungal agents prescribed

Author / Promoting factors	Peyri et al [26] (Spain)	Park et al [27] (South Korea)	Our study (Senegal)
Psychosocial events	-	23 %	50,45
Stress	-	70.8	45
Depression	7,9	-	3
Alcohol	8,6	22,9 %	5
Tobacco	0	9,9 %	9

Table 7: Comparative proportions of factors associated with SD in different countries

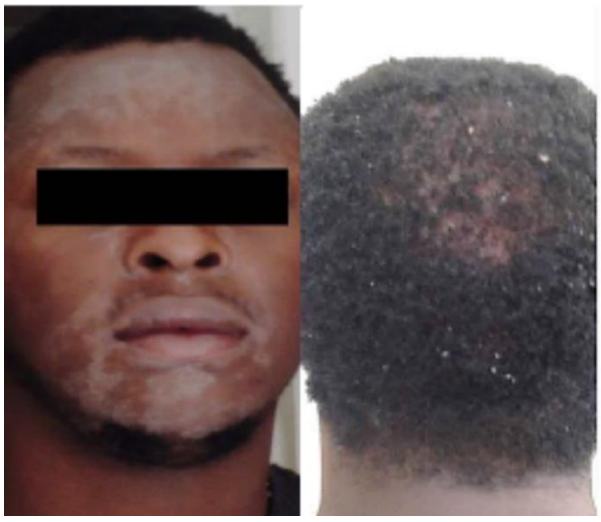

Figure 1: Face and scalp seborrheic dermatitis in a man suffering from depression

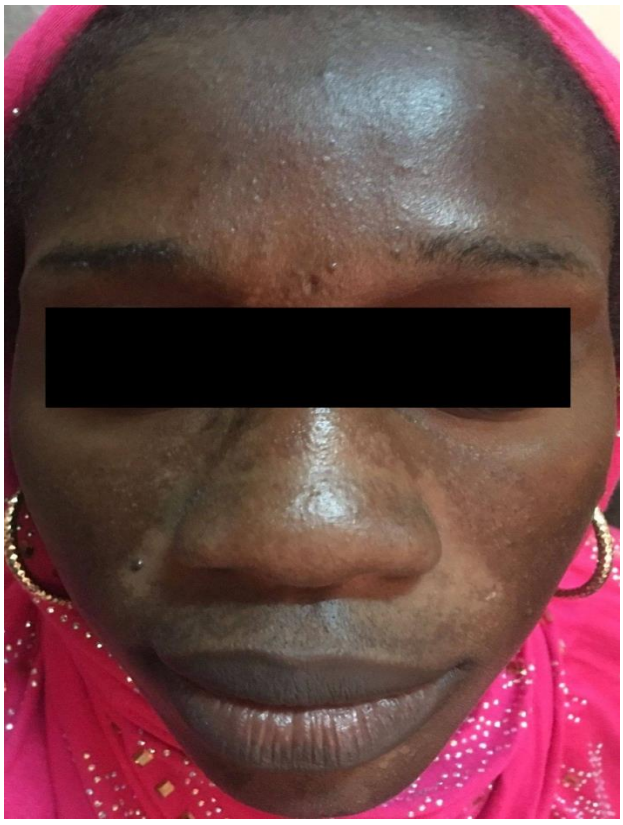

Figure 2: Face seborrheic dermatitis in a housewife

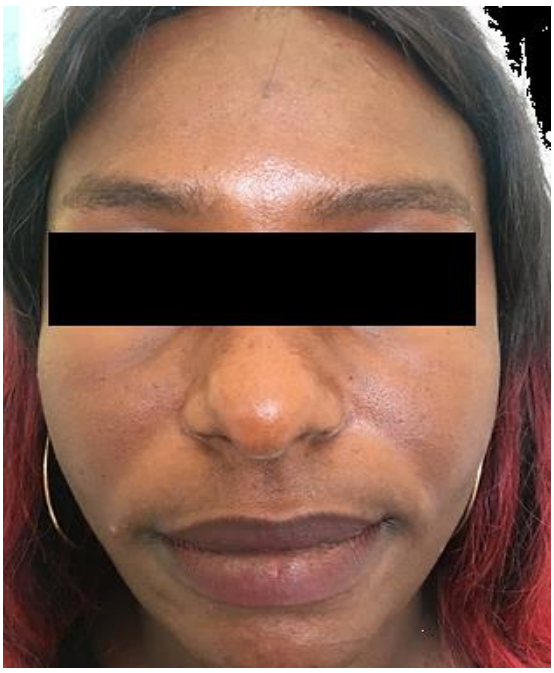

Figure 3: Seborrheic dermatitis of the face in a woman who practices voluntary cosmetic depigmentation

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