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Research Article

Psoriasis and Comorbidities: Diagnostic and Therapeutic Challenges in Madagascar

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Abstract

Psoriasis is a common chronic inflammatory skin disease, but it is still poorly understood by physicians. It evolves in flare-ups of varying intensity and is often associated with comorbidities that worsen the severity of the disease and complicate its management. Our objective was to identify these comorbidities in order to optimize the follow-up of patients with psoriasis in Madagascar. A retrospective, multicenter, descriptive, and analytical study was conducted over six years, including all patients with psoriasis regardless of age or gender, in the dermatology departments of Toamasina and Antananarivo, Madagascar. A total of 224 cases of psoriasis were included, with a slight male predominance and a mean age of 40.2 ± 20 years. Comorbidities were present in 61.6% of patients, mainly dominated by cardiovascular and metabolic risk factors and diseases, as well as psychoaffective disorders, particularly stress and depression. A significant association was observed between the presence of cardiovascular, metabolic, or psychoaffective comorbidities and the severity of psoriasis, suggesting that chronic systemic inflammation and high-risk lifestyles contribute to a vicious cycle of disease worsening. Unemployment, older age (50–60 years), and male sex were also correlated with moderate to severe forms. Our study highlights the importance of systematic screening for comorbidities, an early and multidisciplinary therapeutic approach, and improved awareness among healthcare professionals to enhance the prognosis and quality of life of patients with psoriasis in a resource-limited setting.

Keywords

Cardiovascular Diseases, Comorbidities, Madagascar, Psoriasis

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1. Introduction

Psoriasis is a chronic inflammatory skin disease characterized by erythematous scaly lesions that evolve in flare-ups, with variable intensity and duration of remission. It is caused by accelerated turnover of the epidermis [1].

It remains poorly known among physicians in Madagascar, although it is one of the common reasons for dermatology consultations. It carries an increased risk of comorbidities, which have consequences for patient management, and inadequate management makes it more difficult to control these associated comorbidities. The prevalence of psoriasis in Madagascar is not negligible, estimated at around 2% in Antananarivo [2], and it accounts for 16.7% of pediatric dermatoses in Toamasina [3]. However, to our knowledge, few studies have been conducted on comorbidities associated with psoriasis.

Therefore, a study was conducted with the objective of identifying the different comorbidities in patients with psoriasis consulting in the departments of Dermatology of the Morafeno Hospital, Toamasina and Joseph Raseta Befelatanana Hospital, Antananarivo, in order to improve the management of this condition.

2. Materials and Methods

This is a multicenter, retrospective, descriptive, and analytical study conducted in the departments of dermatology of the Morafeno Hospital, Toamasina and Joseph Raseta Befelatanana Hospital, Antananarivo. The study covers a period of six years (January 2019 to July 2025). All patients diagnosed with psoriasis by a dermatologist, regardless of age, were included. Data were collected from the medical records of patients seen in consultation or hospitalized. The socio-demographic parameters analyzed included age, gender, occupation, and geographic origin. The clinical parameters studied included medical history (family history of similar cases, atopy, other diseases), comorbidities, disease progression, lesion distribution, clinical forms, and disease severity. Comorbidities were classified as follows: cardiovascular and metabolic diseases and risk factors: diabetes, hypertension, stroke, heart failure, obesity, tobacco use, alcohol consumption, inflammatory and autoimmune diseases: arthritis, asthma, vitiligo, psychoaffective state: stress, depressive syndrome, and neoplasms: lipoma, breast cancer. Severity was assessed using BSA, PASI, and DLQI scores. The disease was considered mild if the scores were < 10, and moderate to severe if BSA ≥ 10 and/or PASI ≥ 10 and/or DLQI ≥ 10. Statistical analysis was performed using Epi-info 7 software, statistical significance was set at $p \leq 0.05$. Anonymity and confidentiality of the subjects studied were respected.

3. Results

During the study period, 224 patients out of 6,579 were included, representing a prevalence of 3.4%. A slight male predominance was observed, with a sex ratio of 1.01. The mean age of patients was 40.2 ± 20 years, with extremes ranging from 2 to 83 years. Regarding occupation, unemployed individuals accounted for 20.36%, students for 26.78%, and professionals for 52.23%. The majority of patients came from the Atsinanana (35.26%) and Analamanga (40.17%) regions. Associated comorbidities were observed in 138 patients, representing 61.6%. Among these comorbidities, cardiovascular and metabolic risk factors and diseases were present in 66 patients, or 47.82% (Table 1).

Table 1. *Distribution of medical history and comorbidities.*

Variables	Frequency n = 224 (100%)
Family history of psoriasis	3 (1.3)
Patients without comorbidities	86 (38.39)
Patients with comorbidities	138 (61.6)
Cardiovascular and metabolic risk/diseases	66 (47.82)
Hypertension	27 (19.56)
Diabetes	20 (14.49)
Alcohol consumption	32 (23.18)
Smoking	53 (38.4)
Obesity	5 (3.62)
Stroke	1 (0.72)
Arthritis	6 (4.34)
Asthma	4 (2.89)
Vitiligo	2 (1.44)
Psychoaffective disorders	58 (42.02)
Stress	38 (27.53)
Depression	20 (14.49)
Lipoma	1 (0.72)
Breast cancer	1 (0.72)

Regarding clinical presentation, vulgar psoriasis was the most frequent form (70.98%). Concerning psoriasis severity, severe forms were found in 65 patients (29.01%), including erythrodermic psoriasis (Figure 1) in 14.28%, pustular psoriasis in 7.14%, and psoriatic arthritis in 4.01%. A significant association was observed between male sex and psoriasis severity ($p = 0.016$), as well as between age and severity ($p = 0.001$). Severe forms were particularly observed in patients aged 50 to 60 years, accounting for 12.5%.

Furthermore, a significant correlation was found between

occupation and psoriasis severity ($p = 1.1 \times 10^{-6}$), with unemployment being one of the most frequent factors favoring severe psoriasis, accounting for 30.88%.

Finally, the presence of comorbidities, particularly cardiovascular, metabolic, and psychoaffective, was strongly associated with moderate to severe forms of psoriasis (p = 0.0006). During winter, we observed a higher number of psoriasis patients. However, a non-significant correlation was observed between seasons and psoriasis severity (p = 0.344).

Figure 1. *Psoriatic erythroderma.*
Source: Department of Dermatology, Morafeno Hospital, Toamasina, Madagascar

Table 2. *Correlation between clinico-demographic parameters and psoriasis severity.*

Variables	Severity (n=224; 100%)			*p-value*
	Not classified (n=20)	Mild (n=139)	Moderate to severe (n=65)	
Age				
30-40	5 (2.23)	45 (20.08)	10 (4.46)	*0.001*
50-60	3 (1.33)	30 (13.39)	28 (12.5)	
Gender				
Male	8 (3.57)	60 (26.78)	45 (20.08)	*0.016*
Female	12 (5.35)	79 (35.26)	20 (8.92)	
Occupation				
Unemployed	3 (1.33)	35 (29.62)	25 (15.62)	11.10^{-7}
Students	12 (5.35)	25 (15.62)	15 (6.69)	
Season				
Winter	12 (5.35)	70 (31.25)	43 (19.19)	*0.344*
Summer	8 (3.57)	69 (30.8)	22 (9.82)	

The analysis of clinical forms did not reveal a significant association between age and the different clinical forms of psoriasis (p = 0.56). However, nail involvement was mainly observed in the vulgar and keratotic forms, with a significant correlation (p = 0.023) (Table 3).

Table 3. *Correlation between clinico-epidemiological parameters and clinical forms of psoriasis.*

Variables	Clinical forms (n=224; 100%)					*p-value*
	Vulgar	Guttate	Erythroderma	Keratosis	Pustular	
Age						
30-40	45 (20.08)	12 (5.35)	15 (6.69)	1 (0.44)	5 (2.32)	*0.536*
50-60	50 (22.32)	10 (4.46)	10 (4.46)	1 (0.44)	4 (1.78)	
Nail involvement						*0.023*

Variables	Clinical forms (n=224; 100%)					*p-value*
	Vulgar	Guttate	Erythroderma	Keratosis	Pustular	
Yes	50 (22.32)	8 (3.57)	10 (4.46)	1 (0.44)	5 (2.23)	
No	109 (48.66)	27 (12.05)	22 (9.82)	1 (0.44)	11 (4.91)	

4. Discussion

Our study aimed to identify the different comorbidities in patients with psoriasis in Toamasina, Madagascar. The prevalence of 3.4% is higher than that reported in a 2012 Malagasy study, which found a prevalence of 2% [2]. Furthermore, other studies conducted in different countries reported prevalences lower than that of our study (Table 4). In contrast, a higher prevalence of 4.42% was observed in France in 2022 [4].

These differences could be explained by key health determinants such as limited access to healthcare, reliance on traditional treatments, skin phototype, warm climate, and genetic predisposition [5, 6].

Table 4. *Prevalence comparison.*

Literature	Prevalence (%)
Korsaga Somé; Burkina Faso; 2013 [7]	1.37
Haïdara; Mali; 2020 [8]	0.4
Egeberg et al; Denmark; 2017 [9]	2.2
Nazir et al; USA; 2022 [10]	1.39
Fernández-Ávila et al; Colombia; 2022 [11]	0.06
Richard MA et al; France; 2021 [4]	4.42
Our study	3.4

The mean age was 40.2 ± 20 years, with extremes ranging from 2 to 83 years. This result is consistent with the study by Ammar et al., which reported a mean age of 38.4 years [12]. In France and Maghreb countries, the mean age is higher, reaching 49.4 years and 46 years [12, 13]. This difference could be explained by the youth of our population, which is mainly composed of active adults who are more exposed to stress, a known trigger factor for psoriasis.

A male predominance was observed, with a sex ratio of 1.01. Our results are similar to those of studies conducted in Colombia (SR = 1.08) and Tunisia (SR = 1.8) [11, 14]. This could be explained by greater male exposure to stress and work-related conditions.

Cardiovascular and metabolic comorbidities were the most frequently observed, with a strong predominance of alcohol consumption and smoking (23.18%), hypertension (19.56%), and diabetes (14.49%). These results are consistent with studies conducted in France, Tunisia, Taiwan, and the United States regarding the frequency of cardiovascular risk factors in psoriasis [15-18]. This association could be explained by the fact that chronic inflammation related to psoriasis promotes the onset and worsening of comorbidities, particularly cardiovascular and metabolic ones. Furthermore, smoking and alcohol consumption exacerbate this inflammation, while pro-inflammatory cytokines such as IL-1, IL-6, and TNF-α contribute to the development of dyslipidemia and insulin resistance [19-21]. In addition, certain treatments for psoriasis, such as topical corticosteroids and cyclosporine, as well as some medications for comorbidities, notably beta-blockers, can worsen the disease [22, 23].

Psychoaffective disorders were also observed in 58 patients (42.02%), mainly related to stress. Our findings are consistent with African studies, which report that these disorders are involved in 80% of psoriasis flare-ups in the Maghreb [12] and 60.5% of cases in Marrakech [24]. Psychoaffective disorders are recognized as a triggering or aggravating factor for psoriasis [25].

In the context of limited resources in the country, life is stressful, which may partly explain this association. Stress can lead the population to adopt unhealthy lifestyles, such as smoking and alcohol consumption, unbalanced diets, and physical inactivity, thereby promoting the development of comorbidities.

Regarding clinical forms, our results are in agreement with several studies that also highlight the predominance of vulgar psoriasis and guttate psoriasis. However, the reported rates vary across studies. Ammar et al. observed 79.5% of cases as plaque psoriasis and 23% as guttate psoriasis [14]. A German study reported 90% of cases as vulgar psoriasis and 6.6% to 9% as guttate psoriasis [26]. Similarly, Morrone et al. reported 62.9% of cases as the vulgar form and 13.9% as guttate psoriasis [27]. A significant association between vulgar and keratotic psoriasis and nail involvement was observed ($p = 0.023$), which is consistent with Tunisian and Moroccan studies by Mesrati and Boudhir [28, 29].

The predominance of these forms can be explained by their chronic course and their association with common triggering factors such as stress, infections, and genetic predispositions [30, 31].

Furthermore, severe forms were observed in 29.01% of patients, including psoriatic arthritis in 4.01%, erythrodermic psoriasis in 14.28%, and pustular psoriasis in 7.14%. A Malagasy study by Rasolofoniaina et al. reported 4.6% psoriatic arthritis and 7.8% erythrodermic psoriasis [2]. A Brazilian study reported psoriatic arthritis (2%), erythrodermic psoriasis (5.3%), and pustular psoriasis (4.6%) [32]. In contrast, a Senegalese study of 327 patients reported 31% severe forms (102 cases), including 14 cases (13.72%) of psoriatic arthritis, 76 cases (74.5%) of erythrodermic psoriasis, and 12 cases (11.76%) of pustular psoriasis [33]. Similarly, a retrospective analysis conducted in Ethiopia on 954 psoriasis patients revealed higher rates: psoriatic arthritis (17%), erythrodermic psoriasis (6.1%), and pustular psoriasis (9.5%) The variation in the rates of severe psoriasis forms between different studies can be explained by genetic, environmental, and socio-economic factors that influence disease progression. In addition, access to healthcare and early treatment differs across regions, which can affect the development of severe forms, particularly erythrodermic and pustular psoriasis.

Sixty-five cases (29.01%) of moderate to severe psoriasis were observed. A study conducted in South Africa reported a higher rate of severe forms (59.2%) [34]. This difference could be explained by delays in management, lack of awareness or neglect of comorbidities, and poor treatment adherence, often linked to lower socio-economic and educational levels. Furthermore, patients with severe forms reported disease onset in winter. Although our study did not find a statistically significant link between season and psoriasis severity ($p = 0.344$), a proportional increase in severe cases was observed during this period.

Comorbidities were identified in half of the moderate to severe psoriasis cases, with a significant correlation ($p = 0.0006$). This result is consistent with the findings of Mahe et al., who also highlighted this association [35]. This could be explained by a lack of information about skin diseases, low socio-economic status, and the absence of screening for associated conditions. In addition, delays in referral to a specialist and late diagnosis of psoriasis increase the risk of comorbidities over time.

5. Conclusion

Our study highlighted the importance of psoriasis, which can occur at any age and affect both sexes in various forms. It also identified the main associated comorbidities, particularly cardiovascular diseases, metabolic risk factors, and psychoaffective disorders, whose interaction promotes increased psoriasis severity and complicates the management of underlying conditions. These findings emphasize the need for early and multidisciplinary management of psoriasis. Although our study does not reflect all cases of psoriasis in Madagascar, it provides an overview of the epidemiological and clinical profile of patients, thereby contributing to the improvement of their care.

Abbreviations

BSA	Body Surface Area
DLQI	Dermatology Life Quality Index
PASI	Psoriasis Area and Severity Index

Author Contributions

Fenohasina Rakotonandrasana: Data curation, Formal analysis, Investigation, Methodology, Resources, Writing – original draft

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Conflicts of Interest

The authors declare no conflicts of interest.

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