

A NOVEL STUDY OF LICHEN PLANOPILARIS AMONG DIFFERENT IRANIAN ETHNICITIES BASED ON COMPUTER-AIDED PROGRAMS

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ABSTRACT

Introduction: Demographic studies of a disease can reveal the characteristics of that disease among a specific population and will help the physicians to achieve a more accurate perception about it. The demographic of Lichen PlanoPilaris (LPP) among the Iranian population is unknown. The aim of this study is to describe the clinical, demographic, and histopathologic findings of lichen planopilaris in the Iranian population.

Materials and Methods: In this cross-sectional study, all the patients with Lichen planopilaris were referred to the dermatology clinic of Imam Khomeini hospital from 2013 to 2015. Lichen planopilaris can be diagnosed by collecting histological evidence, dermatological examination, and clinical diagnosis. Their demographic characteristics, drug histories, onset of disease, and family histories were obtained by written questionnaire. Additionally, this study employed SPSS v.20 as the statistical analysis software.

Results: One hundred patients were enrolled in this study. With an average age of 47.11 years, 78% of the patients were female, and 50 of these were housewives. The patients included were often from Tehran with Fars ethnicity. Among these patients, 7 had alopecia areata skin disease, and 10 of them suffered from thyroid disease. Most of the histopathology samples collected from these biopsies revealed degeneration of the basal layer of the follicular structure, perifollicular fibrosis, inflammatory cells, and atrophy of the pilosebaceous structures.

Conclusion: Both the age spectrum and the disease distribution of LPP among the Iranian population were very diverse when compared to previous studies. Moreover, this study helps the physicians to have a brighter vision about the main reason and cause of LPP spread among diverse Iranian Ethnicities.

KEYWORDS

Clinical Features, Epidemiologic, Demographics, Histology, Lichen PlanoPilaris (LPP), Statistical Package for the Social Sciences (SPSS).

1. INTRODUCTION

Lichen plan is autoimmune inflammatory disease that affects organs or tissues like nails, mouth, mucosal membranes and scalp. On the other side, lichen planopilaris (LPP) is a follicular form of lichen planus, an autoimmune disease, which frequently presents as primary cicatricial alopecia and a rare inflammatory scalp disorder [1-4]. Lichen planopilaris is clinically characterized as hair loss, hyperkeratosis and perifollicular erythema [2-5]. The age of onset of LPP is between 40 and 60 years, and women are more affected by it than men [1, 6]. Those lesions which affect the scalp, can be singular or multimodal. They can affect the middle and surrounding area of the

scalp. Hair loss, that is also known as alopecia, is a very prevalent complaint among the majority of patients. The permanent type of alopecia accompanied by scar, can be seen frequently in a variety of skin disorders. In this type of skin disorder, follicular unit is replaced by fibrous tissue, that can make differences between the skin disorders based on their pathogenesis and pathology symptoms. The patients who suffer from such disorders, complain of hair loss, itching, local pain, tenderness, and irritation.

The incidence, prevalence, and physiopathology of LPP is unclear and unknown [7- 9]. North American tertiary hair research centers recommend that patients with existing lichen planopilaris be admitted to their centers to evaluate their demographic, epidemiologic, and clinical features [10]. Demographic and Epidemiologic data on LPP in Iranian people are limited. The aim of this study is to describe the clinical, demographic, and histopathologic findings of lichen planopilaris among the Iranian population.

2. MATERIAL AND METHODS

This cross-sectional study was conducted on patients with the diagnosis of lichen planopilaris who were referred to the dermatology clinic of Tehran Imam Khomeini hospital affiliated by Tehran University of Medical Sciences (TUMS) between Sep 2013 and Sep 2015.

Lichen planopilaris was diagnosed by collecting histological evidence, dermatological examination, and clinical diagnosis. The inclusive criteria were lymphocytic cicatricial alopecia with perifollicular infiltrate. Patients without the histological confirmation were excluded.

Information about demographic characteristics, drug history, onset of disease, family history, the presenting complaint (signs and symptoms), hepatitis vaccination, consumption of gold or Dental amalgam, were obtained by written questionnaire.

This study was approved by the research Ethics Committee of the Tehran University of Medical Sciences, and the participants gave their voluntary participation consent at this study.

3. RESULTS

The whole statistical analysis related to this study are done by the means of SPSS v.20 (SPSS Inc, Chicago, IL, USA). A total number of 118 patients were enrolled in this study, and of these 100 had the inclusive criteria and therefore were included in this study. Of these 100 patients, 78 (78%) were women and 22% were men. The average age was 47.11 ± 13.10 years, with the youngest patient being 14 and the oldest 82. Ninety percent of the patients were married. The age of onset of disease was between 7 to 70 years, and the average age was 41.19 ± 13.03 . A list of the demographic characteristics are listed in Table 1.

Table 1. Demographic characteristics

title	characteristic	N
Smoking	Yes	4
	No	96
Ethnicity	Fars	88
	Turkic	8
	Kurd	3
	Lori	1
Education	Low literacy	12
	Diploma	48
	Bachelor	30
	Master degree	8
	Doctorate degree	2
Domicile	Tehran	73
	Other city	27
Occupation	Housekeeper	50
	Employee	19
	Self-employed	12
	Student	4
	Unemployed	7
	Another job	8
Hair Color	Yes	51
	No	49

Fifty-one percent of the present patients had a history of stress and major psychological distress before the onset of symptoms such as suffering from the death of a very-near relative like a spouse or a serious illness of a child, and so on. Fifteen percent of the patients had a long-term duration history to sun exposure. Two of the patients had a history of radiation therapy (RT). In 19% of the patients, there was a positive history of LPP. Twenty-one percent of the patients had received a hepatitis vaccination before the onset of LPP, and none of them had a history of infectious disease.

Among the understudied patients, the most commonly consumed drug was levothyroxine, and the propranolol and NSAIDs were in the next rank of consumption. The most common sign, among the participating patients in our study, was alopecia with the occurrence rate of 91%. The rate of erythema, scarring, scaling, pigmentation and frontal fibrosis symptoms among the understudied patients were 59%, 25%, 25%, 22% and 9%, respectively. The treatments for lichen planopilaris patients are as follows: topical treatment, intralesional treatment, and systemic treatment. The Systemic treatment with 85%, topical treatment with 77% and injection treatment at the lesion site were 47% in our patients. 57% of the patients we studied have only LPP. 29% of patients first had lichen planus in other parts of the body and later developed lichen planopilaris. In 10% of patients, they first had lichen planopilaris and then other parts of their body became infected with lichen planus.

The Signs, symptoms, and medical history of the participating patients in this research are presented in Table 2.

Table 2. Signs, Symptoms and Medical History

Title	Characteristic	Frequency
Diverse skin disease	Psoriasis	3
	vitiligo	3
	Alopecia areata	7
	Alopecia androgenic	3
	Eczema	5
	Rosacea	3
non-skin disease	Hypothyroidism	10
	Diabetes mellitus	8
	Lupus Erythematosus	2
	Rheumatism arthritis	1
	Behcet's disease	1
	Epilepsy	1
	Minor thalassemia	2
Symptom	Itching	69
	Local pain	6
	Tenderness	18
	Local irritation	14
	Hair loss	89
	Red spots	11
	Welding	5
Sign	Alopecia	91
	scar	25
	Erythema	59
	pigmentation	22
	scaling	25
	Frontal fibrosis	9
LP in other organ	Nail	10
	oral	22
	skin	58
	genital	10
Type of treatment	Topical	77
	Systemic	85
	Intralesional injection	47
Disease features	First LP then LPP	29
	First LPP then LP	10
	Only LPP	57
Drug history	Dental Gold	0
	Amalgam in dental	70
	NSAID	8
	propranolol	8
	Levothyroxine	10

Moreover, table 3 shows the frequency of characteristics related to the histopathology studies.

Table3. Histopathology report

Characteristic	Frequency
Hyperkeratosis, follicular plugs and degeneration of basal layer	25
pigment incontinence in dermis	33
Degeneration of basal layer of follicular structure	98
Decreased density of hair follicles/Increased in catagen-telogen	87
Perifollicular fibrosis and inflammatory cells and atrophy of pilosebaceous structures	97
Fibrous-tract and stellae	67

There is a biopsy specimen slide for each of the patients participating in our study. After studying 100 histopathology slides by the pathologists, the following dominant results are achieved:

1. Degeneration of basal layer of follicular structure
 2. Perifollicular fibrosis and inflammatory cells and atrophy of pilosebaceous structures
- Figure 1 shows the statistical results for histopathology studies, mentioned above.

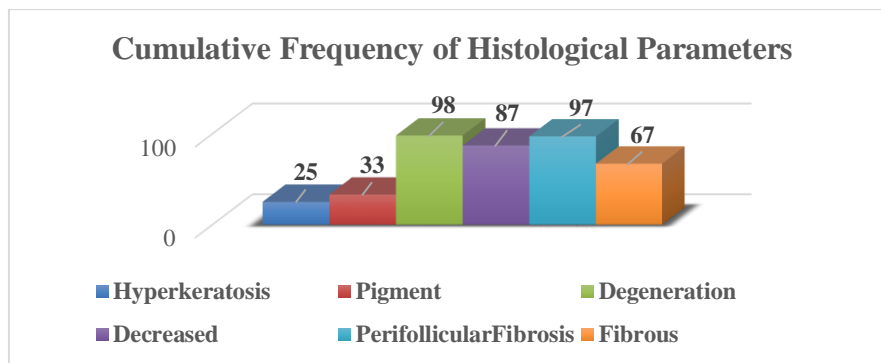


Figure 1. Graph of cumulative frequency of parameters achieved by histological studies

4. DISCUSSION

This current, cross-sectional study attempts to explain the demographics and Clinical Features of Lichen planopilaris in the Iranian population.

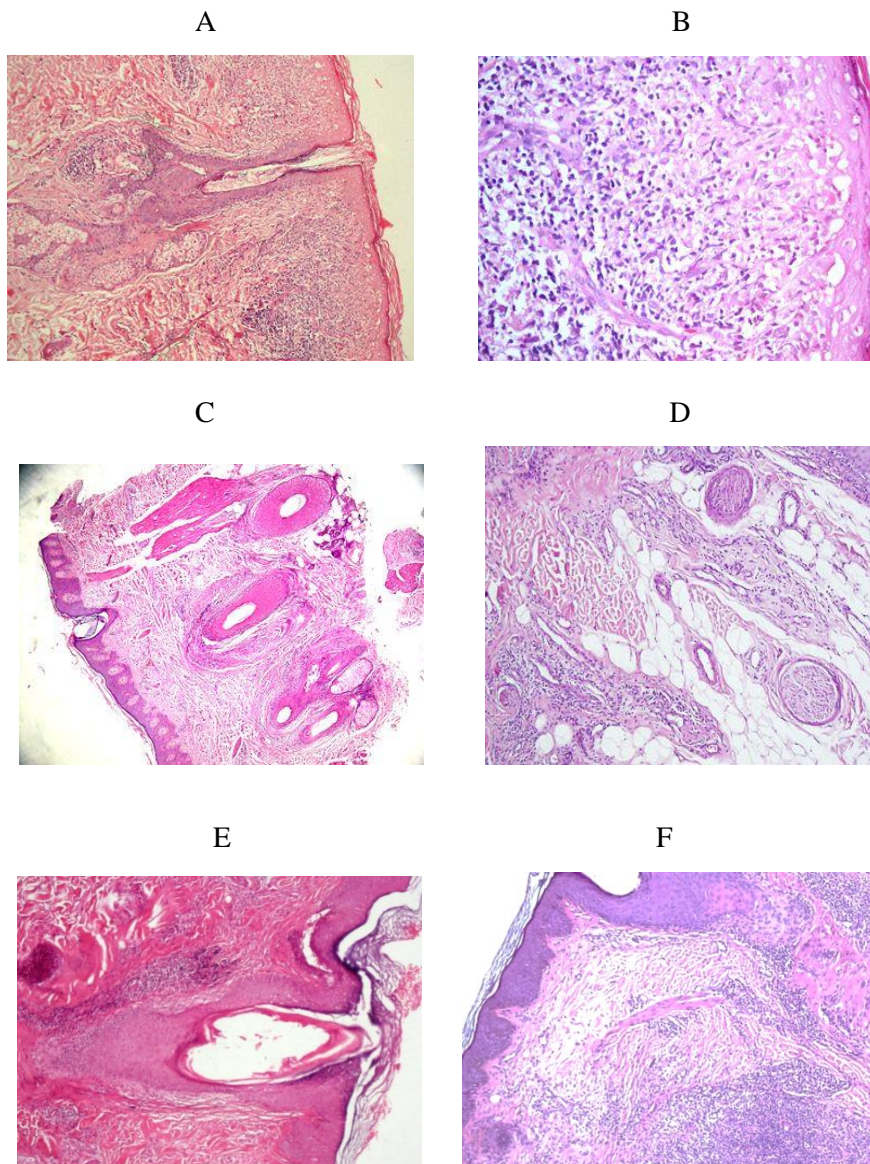
This study was compared to the results of similar studies, which discovered that usually young women are affected by LPP. These other studies demonstrated that LPP is a rare and uncommon inflammatory disease, which the results of this current study have also demonstrated within the Iranian population. Although the age spectrum for the LPP affected patients varied widely [11]: the ages of the patients participating in this study are between 14 and 82 years old. In the other studies, the range of ages for the LPP affected patients vary between 25 and 70 years old [12]. Both the age spectrum range and distribution in the Iranian population are very wide. In a retrospective study of 355 patients, where the mean age was 56 years old, the patients were between the ages of 21 to 81 [13]. In both this current study and other similar ones, Lichen planopilaris develops in association with lichen planus affecting the nails, skin, and mucosa, demonstrating similar results as the previously conducted studies [14, 15]. In the results of Mehregan et al.'s study, 45 patients, affected by Lichen planopilaris with an average age of

onset of 52 years [16], participated. However, the average age of onset in this present study is 41 years.

The 10-year difference in the average age of onset of LPP for the Iranian population compared to the worldwide statistics is a very important factor which needs to be taken into consideration. In Mehregan et al.'s study, the female to male ratio was 4:1, which is similar to the ratio of the present study [16].

In Tan et al.'s study, the gender difference ratio among 25 of the patients with Lichen planopilaris was 1.8:1 [17]. In several studies, thyroid disease was significantly more frequent among the patients with Lichen planopilaris [4]. Hypothyroidism was the most common thyroid abnormality in LPP in this study, which is the same as the other studies [4]. In this study Diabetes mellitus was also common.

Figure 2 illustrates the histopathological results for haematoxylin and eosin (H&E) staining of biopsy slides and studied under optical microscopes.



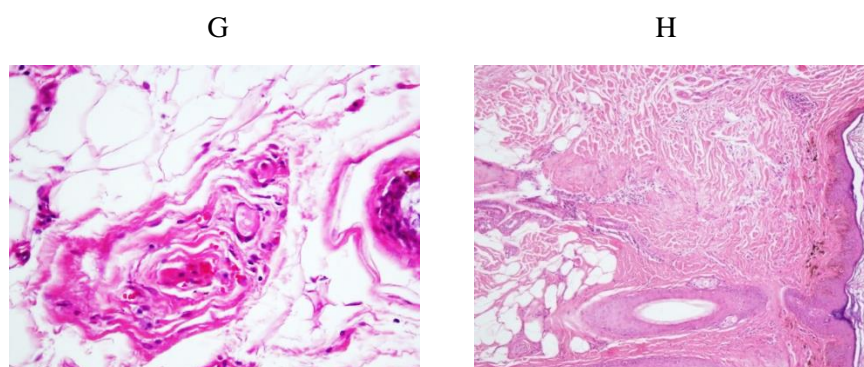


Figure 2. Histologic finding: A, B) interface Lichenoid infiltrated by epidermal atrophy Orthokeratosis, Follicular plugs and vacuolization of basal layer - there is perivascular and perifollicular lymphohistiocytic infiltration. LPP with epidermal involvement. C, D, E, F, G) Normal epidermis -Lichenoid reaction pattern involving the follicular epithelium with an association of perifollicular fibrosis and lymphocytic infiltration. Area loss of hair follicle, replaced by linear tract of fibrosis in deep dermis and fat tissue. LPP without epidermal involvement, and H) Stellae.

5. CONCLUSIONS

Due to the low prevalence of LPP among those included in this study, demographic and background information about the patients was collected, and their association with the disease was investigated. It is strongly recommended that further studies on the risk factors for patients newly diagnosed with LPP be done by academic referral centers.

This is also a case control study for patients whose information is in the database of the Skin Research Center, which conducts focused studies on LPP. This study has proven that the demographic criteria among the Iranian population are different, and in some cases early attention is urgent. The differences between the demographic factors can provide further studies and support, but more management models are recommended.

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