Title
Identifying first-degree family members in patients with frontal fibrosing alopecia and lichen planopilaris in a specialty alopecia clinic

Journal
International Journal of Women's Dermatology, 9(3)

ISSN
2352-6475

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Publication Date
2023-10-01

DOI
10.1097/jw9.0000000000000088

Research Letters

OPEN

Identifying first-degree family members in patients with frontal fibrosing alopecia and lichen planopilaris in a specialty alopecia clinic

Keywords: cicatricial alopecia, first-degree relative, frontal fibrosing alopecia, genetics, lichen planopilaris, scarring alopecia

Lichen planopilaris (LPP) and frontal fibrosing alopecia (FFA) are two of the most common cicatricial alopecias. Mast cell and chronic lymphocyte attack lead to inflammation around the hair follicle bulge, primarily affecting the scalp vertex in LPP and frontal hairline in FFA. Approximately 50% of patients are asymptomatic, while 50% report scalp symptoms such as burning and pruritus.[1] A genome-wide association study in various European cohorts observed a significant association with FFA at 4 genomic loci: 2p22.2, 6p21.1, 8q24.22, and 15q2.1. The HLA-B*07:02 allele has been identified within the 6p21.1 locus and the missense variant CYP1B1 at 2p22.1.[2] Two genetic studies of LPP found higher frequencies of human leukocyte antigen (HLA) DRB1 and DQB1 genes in LPP-affected patients.[3] This evidence, along with familial FFA and LPP cases in the literature supports the existence of a genetic component to both disorders. The scarcity of pediatric cases and varying age of onset in LPP and FFA may suggest that their development relies on epigenetic influence. In either case, information on the inheritance of FFA and LPP is sparse. Our study aims to investigate trends in family history, demographics, and ethnic distribution in patient populations with LPP and/or FFA.

We retrospectively identified 422 adult patients diagnosed with LPP and FFA in specialty alopecia clinics in Burlington, Massachusetts and Irvine, California. Demographics, disease onset, symptoms, and family history of LPP or FFA in a first-degree relative were assessed by patient intake forms completed at initial visits or chart review. The clinical characteristics of patients are outlined in Table 1.

Of all patients with LPP and/or FFA, 20 (4.7%) reported having a first-degree family member with the same hair loss condition. First-degree family members were affected in 11 out of 20 (55.0%) patients with LPP, 4 out of 20 (20.0%) with FFA, and 5 out of 20 (25.0%) with both. Two patients (10.0%) with LPP had >1 affected first-degree relative. There were no significant differences in age of onset, gender, race, diagnosis, and characterization of scalp symptoms in patients with a family history in a first-degree relative versus those without. The average age of onset of disease in patients with affected first-degree relatives (49.3 ± 15.2 years) was lower than in patients without affected first-degree relatives (54.9 ± 15.1 years, $P = 0.2$).

Table 1

Characteristics of patients with LPP/FFA with and without affected first-degree relatives

Characteristics	≥1 First-degree relative (n = 20)	No first-degree relatives (n = 402)	*P*-value
Total # subjects	20/422 (4.7%)	402/422 (95.3%)	
Age of onset (years)	49.3 ± 15.2	54.9 ± 15.1	0.20
Gender			0.90
Male	2/20 (10%)	37/402 (9.2%)	0.91
Female	18/20 (90%)	365/402 (90.1%)	0.97
Diagnosis			0.18
LPP	11/20 (55.0%)	195/402 (48.5%)	0.69
FFA	4/20 (20.0%)	151/402 (37.6%)	0.21
Both	5/20 (25.0%)	56/402 (13.9%)	0.20
Race			0.69
Caucasian	16/20 (80.0%)	323/402 (80.3%)	0.99
Asian	2/20 (10.0%)	19/402 (4.7%)	0.30
Hispanic	1/20 (5.0%)	10/402 (2.5%)	0.50
Black	0/20 (0%)	16/402 (4.0%)	0.37
Other	1/20 (5.0%)	19/402 (4.7%)	0.96
Unknown	0/20 (0%)	15/402 (3.7%)	0.39
Scalp symptoms			0.42
None	5/20 (25.0%)	91/402 (22.6%)	0.93
Itching	9/20 (45.0%)	287/402 (71.4%)	0.12
Burning	6/20 (30.0%)	95/402 (23.6%)	0.67
Tenderness/pain	7/20 (35.0%)	117/402 (29.1%)	0.75
Redness	7/20 (35.0%)	117/402 (29.1%)	0.75
Flaking	6/20 (30.0%)	82/402 (20.4%)	0.44

FFA, frontal fibrosing alopecia; LPP, Lichen planopilaris.

What is known about this subject in regard to women and their families?

- While one genome-wide studies and few genetic studies were completed that showed higher frequencies of some alleles amongst women with these conditions, information is largely sparse. Familial cases of frontal fibrosing alopecia (FFA) and lichen planopilaris (LPP) in the literature have also suggested familial influence but there is little data on trends in familial history in women with these conditions.

What is new from this article as messages for women and their families?

- This article helps to quantify the presence of a genetic component in individuals affected by LPP and FFA. It also serves as an impetus for further research on the inheritance of these conditions.

International Journal of Women's Dermatology (2023) 9:e088

Received: 6 December 2022; Accepted 21 April 2023

Published online 14 July 2023

DOI: 10.1097/JW9.0000000000000088

While inheritance patterns of LPP and FFA have yet to be fully elucidated, our data suggest the presence of a genetic component in some individuals. The average age of onset of LPP and FFA in patients with a family history trended toward occurring at a younger age compared to those without an affected first-degree family member, although this finding did not reach statistical significance. Limitations of this study include underestimation in cases where family history is unknown and lack of biopsy confirmation for all identified family members. Nonetheless, given our findings, we believe that this study should serve as the impetus for further research on the inheritance and genetic linkage of these primary cicatricial alopecias.

Conflicts of interest

None.

Funding

None.

Study approval

N/A

Author contributions

SD: Research design, writing of the paper, performance of the research, data analysis; OE: Research design, writing of the paper, performance of the research, data analysis; CP: Research design, writing of the paper, performance of the research, data analysis; NAM: Editing of the paper, sponsoring the study; MMS: Editing of the paper, sponsoring the study.

References

1. Fechine, COC, Valente, NYS, Romiti, R. Lichen planopilaris and frontal fibrosing alopecia: review and update of diagnostic and therapeutic features.An Bras Dermatol. 2022;97:348–57. doi:10.1016/j.abd.2021.08.008.
2. Tziotzios C, Petridis C, Dand N, et al. Genome-wide association study in frontal fibrosing alopecia identifies four susceptibility loci including HLA-B*07:02. Nat Commun 2019;10:1150. doi:10.1038/s41467-019-09117-w.
3. Senna MM, Peterson E, Jozic I, Chéret J, Paus R. Frontiers in Lichen planopilaris and frontal fibrosing alopecia research: pathobiology progress and translational horizons. JID Innov 2022;2:100113. doi:10.1016/j.xjidi.2022.100113.

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