Dermatology Practical & Conceptual

Dermoscopic Features of Scalp Hair in Patients with Various Fitzpatrick Types

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Introduction

Dermoscopy of the scalp (trichoscopy) allows clinicians to closely examine the skin and hair [1]. Studies characterizing healthy scalp hair via dermoscopy are limited, and few include patients of color. The existing literature suggests that darker-skinned patients have hair with greater diameter but lower density, whereas fair-skinned patients have higher hair density but finer strands [2,3]. Understanding the differences in scalp hair characteristics of healthy patients of different Fitzpatrick types may influence personalized approaches to hair restoration techniques and management of scalp disorders.

This study was conducted at a private dermatology clinic. Participants were required to have a clinically normal appearing scalp with no history of scalp or hair disorders. Four images were taken, corresponding to the frontal, mid, vertex, and occipital scalp, respectively. Hair imaging and measurements were conducted using a hand-held trichoscopy system. Mean age was 29.09 years, and 75% of patients were female. The distribution of Fitzpatrick types was: I (6.25%), II (28.12%), III (31.25%), IV (25%), and V (9.38%).

Findings

Terminal hair density, total hair density, average hair diameter, and average distance between hair follicles were determined for each scalp location. Statistically significant differences are highlighted in Table 1.

Fitzpatrick Type II patients had higher terminal hair density than Fitzpatrick Type IV (P=0.012) and V (P=0.039) patients. Fitzpatrick Type II patients also had higher total hair density than Fitzpatrick Type IV (P=0.039) patients at the frontal scalp. These results suggest that skin pigmentation

Table 1. Summary of statistically significant results.

Variable	Vertex	Frontal	Fitzpatrick Type II	Fitzpatrick Type IV	Fitzpatrick Type V	<30 years	>50 years	Female	Male	p-value
Terminal hair density (per cm^2)	150.63	120.31								0.013
			140.44 †	102.75 †	96 †					0.012 (II vs IV); 0.039 (II vs V)
						150.71 §	87 §			0.023
Total hair density (per cm^2)	165.72	135.53								0.015
			151.89 †	115.63 †						0.039
						165.17 §	93.25 §			0.014
								165.17 §	115.63 §	0.011
Diameter (mm)						0.06 ‡	0.048 ‡			0.026
Distance between follicles (mm)								0.6 ‡	0.75 ‡	0.006
						0.6 ‡	0.78 ‡			0.046
								0.66 §	0.81 §	0.023

Abbreviations: † = Frontal, ‡ = Vertex, § = Occipital

may influence hair density in specific scalp regions, as previously reported [4]. Additionally, we found higher terminal and total hair density at the vertex compared to the frontal scalp across all Fitzpatrick types (P=0.013; 0.015). Notably, we found no significant difference in total hair density across Fitzpatrick type, sex, or age at the mid-scalp, indicating that density-related differences are not necessarily evenly distributed across the scalp.

Patients under 30 years demonstrated higher terminal (P=0.023) and total hair density (P=0.014) at the occipital scalp, and greater diameter at the vertex compared to patients over 50 (P=0.026), likely influenced by age-related changes in scalp physiology such as decreased sebum production, reduced stem cell capacity, and cumulative sun exposure [5]. Females demonstrated higher total hair density in the occipital region compared to males, potentially influenced by the hormonal interplay between estrogens and androgens, though other studies have found no significant difference [4,6].

Conclusion

Clinically, the findings of this study may hold implications for the diagnosis and management of hair loss disorders. Recognition of the influences that Fitzpatrick type, age, and sex may have on hair density, distribution, and diameter can allow dermatologists to tailor treatment regimens more effectively. The small sample size limits the generalizability of these findings. Various factors such as hair care regimens and UV exposure were not controlled for and warrant exploration in future studies. With the support of further research, these findings can be used in the development of targeted therapeutic strategies for diverse patient populations experiencing hair and scalp disorders.

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