Trichoscopy findings of normal scalp and hair in blacks - A community survey

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Abstract

Background: Trichoscopic features of scalp and hair diseases have been described in Caucasians, Asians, Hispanics, and Black Americans but few reported in Nigerians. A survey of trichoscopic findings on disease-free scalp and hair of Black Africans becomes relevant and forms a comparative basis for establishing findings in a diseased state.
Objective: To examine the scalp and hair of Nigerians in a semi-urban community with no scalp and/or hair disease and document trichoscopy findings.
Method: A cross-sectional descriptive survey of 307 individuals at a semi-urban market in Lagos where the scalp and hair of all participants were reviewed clinically and using DermLite® dermscope by dermatologists. Demographic data, clinical and trichoscopic findings of participants with no scalp or hair disease were documented using a pre-designed questionnaire. Data was analysed using IBM SPSS version 22. Ethical approval was sought and obtained from the Lagos State University Teaching Hospital (LREC/06/10/1297).
Result: 96 (31.3%) participants had normal hair M:F ratio of 1.1:1.0 . Those aged between 35 – 39 years and <25 years age bracket was 18.8% and 15.6% respectively. White dots were seen in (95; 99%), white dots with regular distribution (93; 96.9%), preserved honeycomb pattern in (92; 95.8%) and peripilar casts in 14; 14.6% of partcipants.
Conclusion: Trichoscopic findings of normal scalp and hair in Black Africans include regular white dots and preserved honeycomb appearance. Peripilar casts and scales may also be seen in Africans without hair or scalp disease.

Résultats de la trichoscopie d'un cuir chevelu et de cheveux normaux chez les noirs - Une enquête communautaire

Résumé
Contexte : Des caractéristiques trichoscopiques des maladies du cuir chevelu et des cheveux ont été décrites chez les Caucasiens, les Asiatiques, les Hispaniques et les Noirs américains, mais peu ont été signalées chez les Nigérians. Une étude des résultats trichoscopiques sur le cuir chevelu et les cheveux sains des Africains noirs devient pertinente et constitue une base comparative pour établir des résultats dans un état pathologique.
Objectif : Examiner le cuir chevelu et les cheveux des Nigérians dans une communauté semi-urbaine sans maladie du cuir chevelu et/ou des cheveux et documenter les résultats de la trichoscopie.
Méthode : Une enquête descriptive transversale auprès de 307 individus sur un marché semi-urbain de Lagos où le cuir chevelu et les cheveux de tous les participants ont été examinés cliniquement et à l'aide du dermscope DermLite® par des dermatologues. Les données démographiques, les résultats cliniques et trichoscopiques des participants sans maladie du cuir chevelu ou des cheveux ont été documentés à l'aide d'un questionnaire prédéfini. Les données ont été analysées à l'aide d'IBM SPSS version 22. L'approbation éthique a été demandée et obtenue auprès de l'hôpital universitaire de l'État de Lagos (LREC/06/10/1297).
Résultat : 96 (31,3 %) participants avaient des cheveux normaux, avec un ratio M:F de 1,1 : 1,0. Les tranches d'âge âgées de 35 à 39 ans et de moins de 25 ans étaient respectivement de 18,8 % et 15,6 %. Des points blancs ont été observés chez (95 ; 99 %), des points blancs à distribution régulière (93 ; 96,9 %), un motif en nid d'abeille préservé chez (92 ; 95,8 %) et des moulages péripilaires chez 14 ; 14,6% des participants.
Conclusion : Les résultats trichoscopiques du cuir chevelu et des cheveux normaux chez les Africains noirs comprennent des points blancs réguliers et un aspect nid d'abeille préservé. Des plâtres et des squames péripilaires peuvent également être observés chez les Africains sans maladie des cheveux ou du cuir chevelu.
Mots clés: Cheveux normaux, Peau noire, Cheveux noirs, Cheveux africains, trichoscopie, Cuir chevelu africain

INTRODUCTION

Trichoscopy findings obviate the need for further investigations in some hair and scalp disorders/diseases.[1,2] Hair differs in people of different races and tribes and even within the same person across different sections of the scalp. For instance, yellow dots are readily seen in Caucasians but not in the pigmented scalp.[3-6] Normal hair is disease free and should have similar characteristics, such as uniformity in hair diameter and lustre while a healthy scalp should have normal follicular openings with no scales, itching or erythema across both sexes, as seen on trichoscopy.[1-5] Studies of non-diseased scalp and hair are few and even fewer reported in Africans.[7,8] Comparative studies across races often include Black Americans but not necessarily Africans.[6] Furthermore, external factors such as climate, diet and hair care practices are known to influence hair growth as well as scalp and hair health.[8,9] These may result in differing features between Black Americans and Africans living in Africa. Thus, a study of the trichoscopy features of the normal scalp and hair of Africans with Fitzpatrick skin phototype IV-VI living in Africa will determine the features in this group of individuals, form a comparative basis for the diseased state and determine if the features are like those of Black-Americans,

This study aimed to examine the scalp and hair of blacks in a semi-urban community with no scalp and/or hair disease and to document the trichoscopy features seen in Africans.

MATERIALS AND METHODS

This was a cross-sectional descriptive survey of 307 individuals in a semi-urban market in Lagos where all participants' scalp and hair were reviewed clinically and with the use of DermLite® dermscope by dermatologists. Each participant was examined in a screened-off section of the open market to ensure privacy and confidentiality. Demographic data, clinical features and trichoscopic findings of participants without scalp or hair disease were documented using a pre-designed questionnaire that covered the type of hairs (whether natural or chemically processed), basic hair grooming measures and hair products used, frequency of hair washes/shampooing, use of hair dyes and other details. The dermatologists had gone through four weeks of independent and synergised review of clinical trichoscopic features on dark skin to minimise bias for the actual study. A pilot of 20 patients reviewed by each of the four dermatologists culled from the dermatology clinics was done. Of the 307 participants, 96 were observed to have normal hair which was defined as hair and scalp free from diseases such as alopecia, and infective or inflammatory hair disorders. Hair that was chemically processed was included if free from disease. The hair and scalp of each participant were cleansed with alcohol swabs where needed to ensure the scalp was free from sweat and dust, before examination by two conferring dermatologists. The scalp was divided into four; frontal, temporal (either right or left was considered as one), vertex and occiput for ease of uniformity. Clinical photographs were taken with a digital camera (Canon DSRL; EOS50D, Tokyo, Japan), with the participant standing against a white background. Trichoscopy examination was performed with a polarized-light handheld dermoscope (Dermlite DL3; 3Gen LLC, San Juan Capistrano, CA, USA) without the use of a liquid medium.

Statistical analysis

Data was entered and analyzed using IBM SPSS software version 22. Categorical variables were presented as percentages, while mean, standard deviation, median and interquartile range were used to represent numerical variables.

RESULTS

Of the 307 participants (Table 1), there were 96 (31.3%) with normal hair with a median age of 36 (29, 48) and an almost equal male: female ratio (1.1:1.0). Table 2 Trichoscopy features were noted as seen in Figure 1. In almost all parts of the scalp, the modal number of hairs per follicle were 2. Figure 2. The right and left temporal scalp were taken as one with findings interrelated. Four hairs per follicle were seen in the vertex and frontal scalp in only one participant each. Almost all the participants had white dots (93; 99%) with regular distribution (93; 96.9%) and preserved honeycomb patterns (92: 95.8%). Figure 1 Peripilar casts and scales were seen as normal findings in 14.6% and 9.4% of participants respectively.

DISCUSSION

This community-based study of black Africans (Nigerians) in Lagos, Nigeria who have no hair or scalp disease shows that there were two hairs in most follicular openings. These two hairs per follicular opening were noted more on the frontal scalp and vertex than on the temporal and occipital scalp areas, echoing findings in a study conducted in Egypt by Moneb et al.[10] White dots

with regular distribution and preserved honeycomb pattern were seen in almost all participants making this a characteristic trichoscopic normal finding in the dark-skinned African scalp.

The median age of participants was 36 years and there was an almost equal number of males and females in the cohort. Table 2 This age is representative of the workforce in the population and not surprising in this cohort of traders in the semi-urban market where this study took place. The effect of aging on the scalp and hair has been discussed with a reduction in hair density as one gets older.[4,5] This cohort had no child participating and less than 10% were more than 55 years, therefore limiting the inference the authors may have on the trichoscopy patterns of normal hair and scalp across ages.

The modal number of hairs per follicular unit were 2 across the four sectors on the scalp. Figures 3. This is similar to other documented findings.[1,6-8] Quantitative review of the hairs per follicle is objective and can easily be replicated across races.[4] As in this study, many dermatologists have documented that there are considerably more hairs on the frontal scalp and vertex when compared to the temporals and occipital scalp.[4]This is a direct corollary of the number of hairs per follicle in the sections with an average of 2-3 terminal hairs per follicle on the occipital and temporal region compared to 2-4 on the frontal and vertex in most people, regardless of race or skin type.[1,8] In this study, only 2% had four hairs per follicle and no participant had more than four hairs per follicle. This is in keeping with the study by Rakowska et al who indicated that 4 hairs or more per follicle is rare.[7] Although this study did not focus on hair density, from the distribution and average number of hairs per follicle in the different sections, the authors opine that there is a relative increase in hair density of the frontal scalp and vertex compared with temporals and occipital scalp. This has been similarly documented in trichoscopy studies done on Caucasian and Hispanic skin. [1,3,4,7]

More than 90% of cohorts had white dots with regular distribution on scalp trichoscopy. Figure 3 The implication of this is that white dots are a normal finding on the healthy scalp of a dark-skinned African though this is not what the literature documents in studies on Caucasian scalps.[2,6,7] Ankad et al. looked at trichoscopy in darker skin and described white dots as pinpoint white dots of eccrine and follicular openings.[11] Evenly distributed yellow dots looked whitish on darker skin tones as the 'yellow' colour could scarcely be appreciated. The subjectivity of perception of colour plays a role here, with difficulty in validating findings. Ocampo-Garza and Tosti corroborated findings by Abraham et al. that white dots are normal on the scalp of people with darker skin phototypes or Africans.[6]Abraham and colleagues showed that white dots correspond histologically with the epidermal portion of the eccrine sweat glands.[12,13] Most documented studies on Caucasian hair have described white dots as empty follicles and closed follicular ostia indicating scarring [2,6,13,14]implying that other parameters are needed to differentiate scarring alopecia from what is a normal finding in the scalp of Africans.

Erythema, peripilar erythema and brown pigments were seen in 3.1%, 3.1% and 1% of participants, respectively. Figure 4 This is surprising because erythema ordinarily signifies inflammation which a healthy scalp and hair should be devoid of. Ocampo-Garza and Tosti, however, documented erythema as being a common feature in scalps of dark-skinned people despite the vascular patterns being difficult to see.[6] It is possible that the few who had erythema on trichoscopic views could have scratched the scalp just before being examined or wore a fitted headgear which may have caused increased blood flow to the scalp when it was undone for examination of the hair and scalp. Erythema may also signify hairstyles that put pressure or traction on the scalp as a subclinical feature. Ogunbiyi et al also noted erythema on the scalp of some fair-skinned Nigerians who had trauma or chronic inflammation.[8] Erythema may be difficult to appreciate in the scalp of people with dark skin as has been documented by many authors,[2,6,11] but this study differs from others in that all participants were of the same skin phototype. This excludes or minimises the relativity bias in perception of colour which may otherwise be seen in a mixed study population.

Also seen in a few participants are peripilar casts (Figure 4) and scales on the scalp. These were not significant and are likely related to the hair products used in addition to the humid environment of the study area.[8] Other trichoscopic features such as coiled hairs, miniaturised hairs and other such characteristics were few and their rarity was unsurprising in this cohort with normal hair and scalp.

CONCLUSION

Trichoscopic features of the scalp and hair of Blacks with normal hair include regular white dots with regular distribution and a

preserved honeycomb pattern. Regular white dots on the scalp of a Black African (Nigerian) do not signify scarring as may be seen in other races. An average of 2 hairs per follicle is seen on most hairs on the scalp, and scales may be seen on the scalp of patients with normal hair.

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Table 1: Socio -demographic and clinical details of the entire population and those of the responde nts without hair loss

Socio-demographic and clinical details of the sample population			Socio-demographic and clinical details of respondents without hair loss		
Variable	**Frequency (n = 307)**	%	**Variable**	**Frequency (n =96)**	%
Age group (years)					
< 25	27	8.8		15	15.6
25 – 29	24	7.8		11	11.5
30 – 34	27	8.8		12	12.5
35 – 39	50	16.3		18	18.8
40 – 44	47	15.3		11	11.5
45 – 49	37	12.1		8	8.3
50 – 54	38	12.4		12	12.5
55 – 59	21	6.8		5	5.2
= 60	36	11.7		4	4.2
Mean ±SD	42.7 ± 12.8		**Median (IQR)**	36 (29, 48)	
Gender					
Male	100	32.6		49	51
Female	207	67.4		47	49
Hair loss on examination					
Yes	211	68.7			
No	96	31			

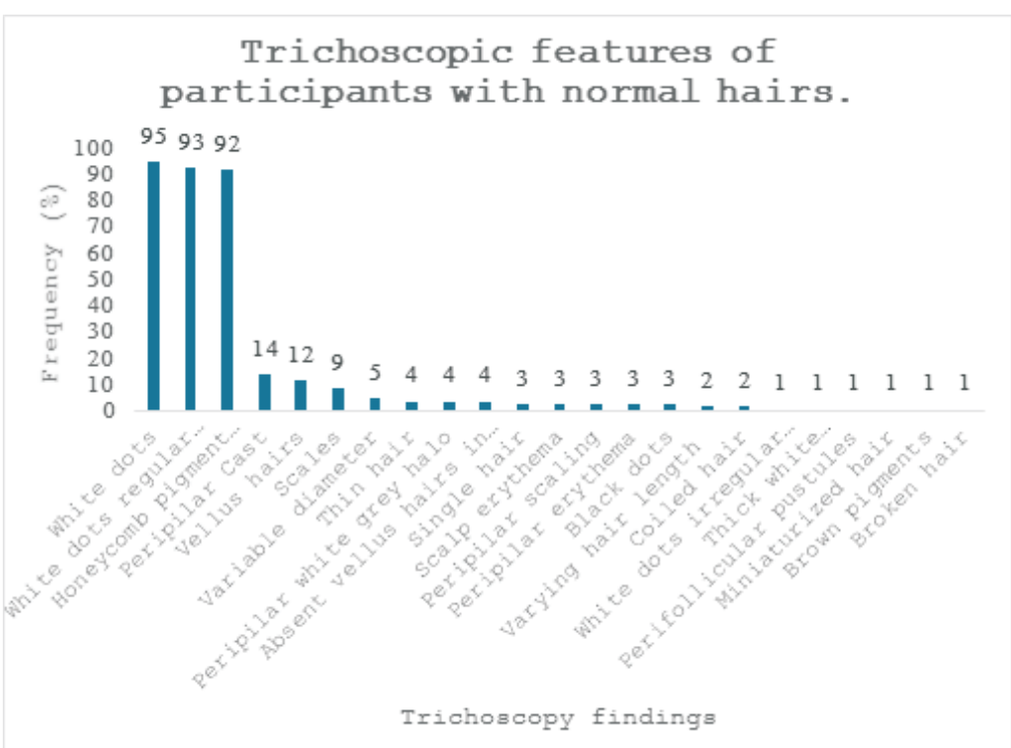

Figure 1: **Trichoscopic features of participants with normal hairs.**

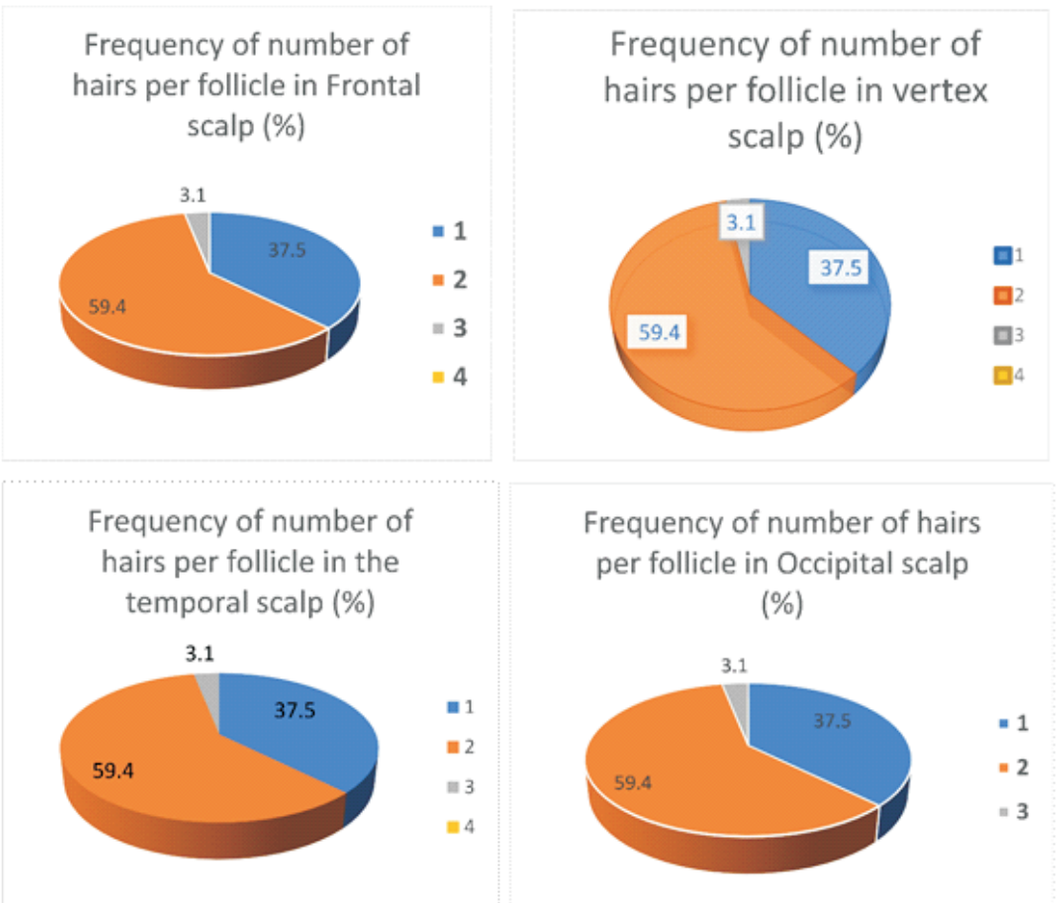

Figure 2: Frequency of number of hair follicles across the scalp.

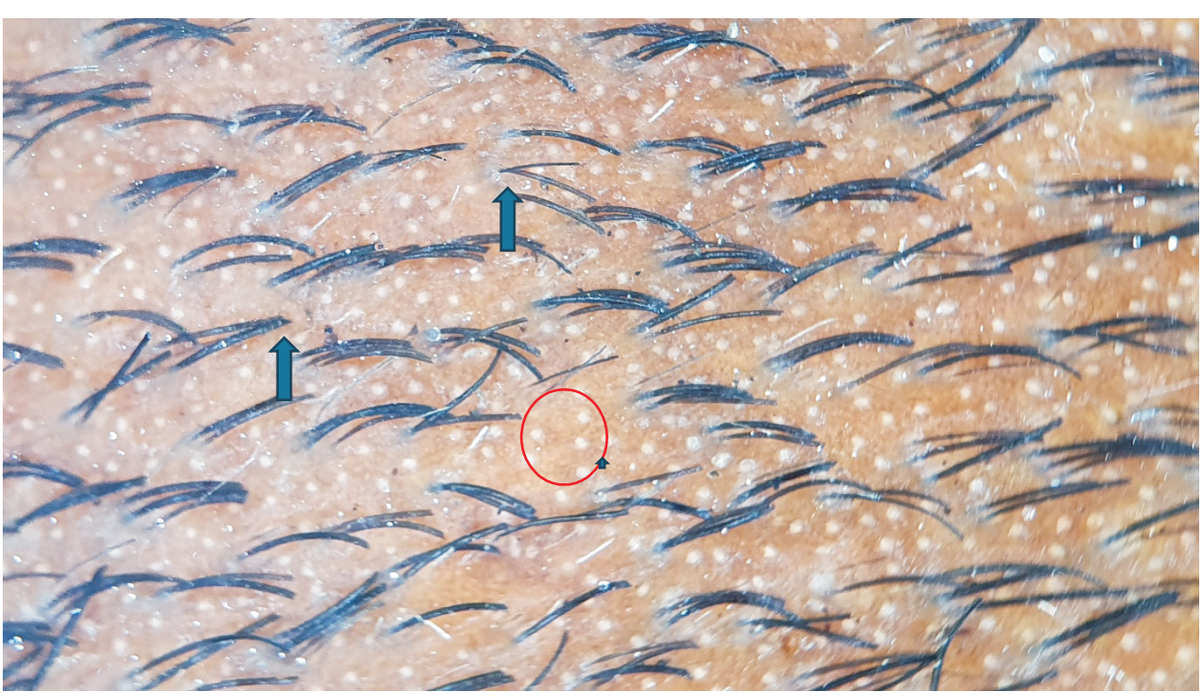

Figure 3: Blue arrows shows 2 hairs per follicle. Red circle shows white dots with regular distribution.

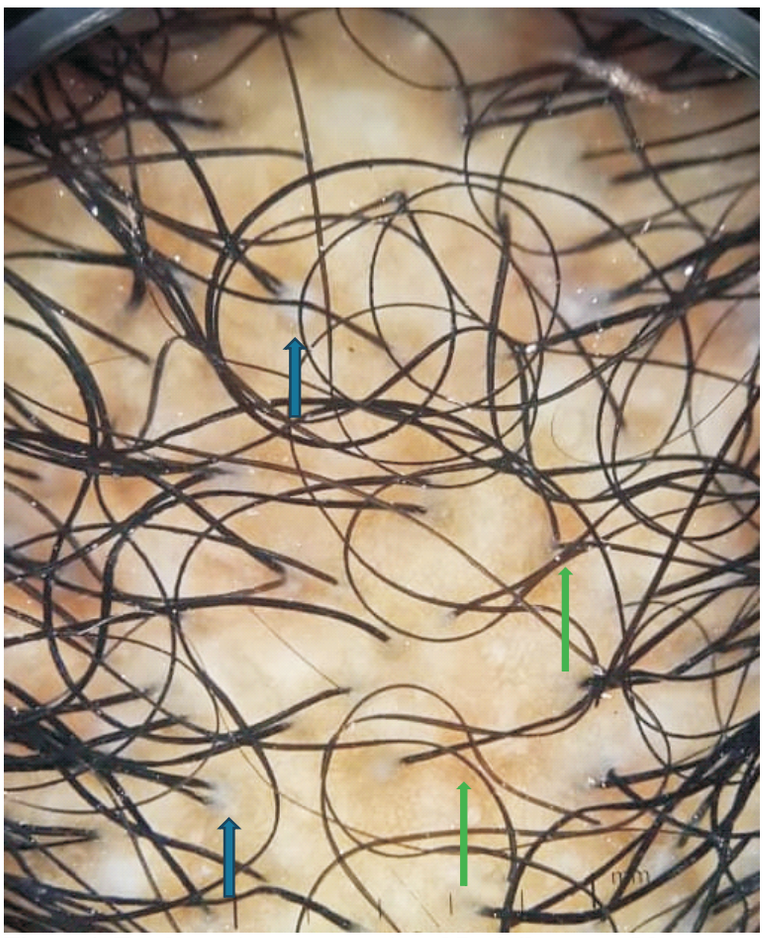

Figure 4: Erythema (green arrows) and Peripilar casts (blue arrows)..