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RELEVANCE OF TRICHOSCOPY IN AGA: A CROSS SECTIONAL STUDY

Dermatology

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ABSTRACT

INTRODUCTION: Androgenetic alopecia is the most common hair loss characterised by non-scarring progressive miniaturization of genetically predisposed hair follicle with a defined pattern distribution.[2] Trichoscopy evolved as a new diagnostic modality for the diagnosis and aids in the determination of prognosis with the advantages of being a simple office procedure and its non-invasive nature.

OBJECTIVE OF STUDY: To evaluate the various trichoscopic findings of Androgenetic alopecia in men and correlate the various findings with Hamilton Norwood grades of AGA.

METHODS: Cross sectional observational study in which 46 male patients with diffuse hair loss were evaluated with predesigned proforma, clinical examination and graded according to Hamilton Norwood scale. Trichoscopic evaluation and capture of trichoscopic images was performed using Dermlite DL 3.

RESULTS: Out of 46 MAGA cases, 12 (26.08%) cases were in H-N Grade IV, which was the highest in our study followed by Grade III & Grade V 11 cases (23.9%). Hair Shaft Thickness Heterogenicity (HSTH) was the most common feature (44; 95.6%). Yellow dots (17.3 %) and Scalp honeycomb pigmentation was found in 56.5% patients particularly in late stages of AGA.

CONCLUSION: Trichoscopy, a non-invasive, in vivo technique for the microscopic examination of scalp in hair loss has the potential to improve the diagnostic accuracy by ruling out other causes of hair loss.[3] It produces real time images helps the clinician for assessment of severity, prognosis and guides in the timely management and evaluating therapeutic response by comparing it with pre-treatment images.

KEYWORDS

Trichoscopy, Androgenetic alopecia, Noninvasive diagnostic modality, Patterned Hair loss

INTRODUCTION:

Androgenetic alopecia is the most common hair loss encountered in dermatology Out Patient Department. It's a type of non-scarring alopecia characterised by progressive miniaturization of genetically predisposed hair follicle with a defined pattern distribution.[1] Terminal to villus hair transformation is the main event in the pathogenesis of AGA. Scalp biopsy was the one widely used objective tool for diagnosis and monitoring of severity thus far. Trichoscopy which denotes dermoscopic imaging of hair and scalp evolved as a new diagnostic modality for alopecias which serves as a valuable link between clinical and histological diagnosis.[5] It can be carried out with the aid of classic dermoscopes, stereomicroscopes, dermoscopes connected to digital camera or mobile phones, videodermoscopes like fotofinder. It aids in the determination of prognosis with advantages of being a simple non-invasive office procedure. It helps to distinguish scarring versus nonscarring alopecia, early androgenetic alopecia (AGA) versus telogen effluvium.The usual magnification is 10-20 X for handheld dermoscopes & 20-160 X for video dermoscopes.

AIM OF THE STUDY:

To evaluate the various trichoscopic findings of Androgenetic alopecia in men and to correlate these findings with Hamilton Norwood grades of Androgenetic alopecia.

MATERIALS & METHODS:

A hospital-based study was conducted out on patients attending dermatology outpatient department in a tertiary care hospital. Patients were recruited from OPD and study was conducted from August 2019-February 2020.

STUDY DESIGN: Cross sectional observational study.
SAMPLE SIZE: A total of 46 cases of males with patterned hair loss diagnosed clinically were included in the study.

EXCLUSION CRITERIA: All other causes of diffuse hair loss were excluded

DATA COLLECTION: After obtaining the consent from the patient, information was taken as per the pre designed proforma, enclosed, recorded on the clinical forms. Complete history regarding the onset, progression, family and treatment history is included in the proforma. Clinical examination was done and patients were graded according to Hamilton Norwood scale. Dermlite DL3N hand held dermoscope (×10 magnification) was employed in the study for Trichoscopic evaluation. Iphone was attached with the help of a universal adapter to save the images. Areas of apparent hair loss including vertex, frontal, and temporal hairline, as well as genetically spared occipital area, were observed through the eyepiece of dermoscope and the photographs were captured with the help of Iphone for analysis.

PARAMETERS SEEN IN TRICHOSCOPIC EXAMINATION:

In androgenetic alopecia trichoscopy abnormalities are more pronounced in the frontal compared to the occipital area. Structures to be analysed are Hair shaft, follicular openings, peri follicular /inter follicular epidermis and cutaneous vasculature for the following parameters.

1. Hair shaft thickness heterogenicity (HSTH): Simultaneous presence of hairs of different thicknesses : vellus, thin, intermediate, and thick & >20% corresponds to vellus transformation[8]
2. Thin hairs
3. Vellus hairs: Hypopigmented, nonmedullated hairs less than 30 mm thick and less than 2–3 mm long. They are produced by miniaturized hair follicles; therefore, their number is significantly increased in AGA
4. Single-hair pilosebaceous units: The proportion of follicular units with only one hair shaft is increased in AGA.[7]
5. Yellow dots: Follicular ostia filled with keratin and/or sebum. A Feature of severe miniaturization. Yellow dots in AGA consist mainly of sebum, which is excreted to the scalp surface by intact sebaceous glands in the absence of terminal hairs.
6. Perifollicular discoloration which includes Brown peripilar sign corresponding to perifollicular microinflammation (perifollicular presence of lymphocytic infiltrates) & White peripilar sign corresponding to fibrosis in Late AGA.[6]
7. Focal atrichia: Small areas (4mm diameter) in the scalp devoid of emerging hairs.
8. Wavy hair

9. Scalp Honeycomb pigmentation: which corresponds to melanotic rete ridges. This feature becomes more prominent with increasing severity of AGA[9]

RESULTS:

Table 1: Distribution By Age

AGE GROUP	NO OF PATIENTS
20-25	16
25-30	18
30-35	10
35-40	2

Table 2: Clinical Grading With Hamilton Norwood Scale

HAMILTON NORWOOD SCALE	Number of patients
Grade 3	6
Grade 4	12
Grade 5	11
Grade 6	11
Grade 7	6

Table 3: Trichoscopic Findings Of Patients With Androgenetic Alopecia

Trichoscopic findings	Number of patients (%)
Hair thickness heterogeneity	44 (95.6%)
Thin hairs	44 (95.6%)
Vellus hairs	42 (91.3%)
Single-hair pilosebaceous units	36 (78.2%)
Yellow dots	8 (17.3%)
Perifollicular discoloration	16 (34.6%)
Wavy hair	14 (30.4%)
Honeycomb pigmentation	26 (56.5%)

Figure 1: A)Trichoscopy Of Normal Scalp B)Trichoscopic Findings In AGA Grade V- Showing Vellus Hair ➡ & Hair Shaft Thickness Heterogenecity C)trichoscopic Findings In AGA Grade III- Peri Follicular Pigmentation –Brown Peripilar Sign ➡

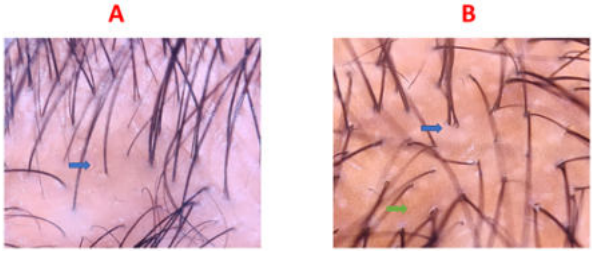

Figure 2; A)Wavy Hair B)Trichoscopic Findings In AGA Grade VII Peri Follicular Pigmentation – White peripilar sign ➡ Honey Comb Pigmentation ➡

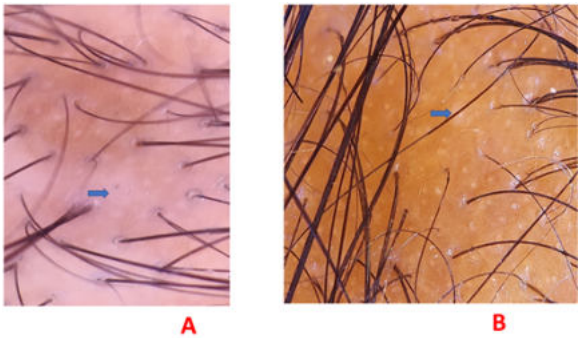

Figure 3; A)Focal Atrichia ➡ B)Yellow Dots ➡

DISCUSSION :

Out of 46 patients with androgenetic alopecia, 18 (39.13%) patients belong to the age group of 25–30 years which was the highest in our study. The mean age of MAGA in our study was 28.09 years. Mean duration of hair loss was 3 years in our study. Majority of our patients (65%) had positive family history with paternal history in 18 patients and maternal history in 12 patients. The most common grade in our study was H-N Grade IV 12 cases (26.08.8%) followed by Grade III & V 11 cases (23.9%) similar to the Chinese study by Wang *et al*.[4] Whereas Grade III was observed by Sehgal *et al*. Grover in Indian population[1] and by Paik *et al*. in the Korean population.[3] However, in a study by Krupa Shankar *et al*.[2] in Indian population Grade II was (27.27%) followed by Grade I (22.12%) and Grade III (21.78%). Out of 46 MAGA cases we found that (44;95.6%) have Hair Shaft Thickness Heterogenecity (HSTH) as most common feature which is considered as hallmark of AGA in previous reports and similar to observations of Hu *et al*[5]. Yellow dots found in 17.3 % which is similar to Chinese study done by Hu *et al*. In contrast 92.4% of males in study done by Amudha ummiti et al showed yellow dots which were seen in both early and late stages[6].Scalp honeycomb pigmentation (SHCP) was found in 56.5% in our study, whereas in a Chinese study by Hu *et al*.[5] it was seen in 33.2% of male in late stages of AGA and a study done by Amudha ummiti et al observed it in 87.9% in males[6]. Perifollicular discolouration was seen in 34.6% patients similar to Chinese study by Hu *et al*(43%) In contrast it was seen in 89% & 90% patients in study done by Amudha ummiti et al and in a study done by Deloche et al respectively.[6]

CONCLUSION:

Trichoscopy evolves as a main tool in the armamentarium of management of alopecias. Being a non-invasive modality which produces real time images it helps the clinician for assessment of severity, prognosis and guides in the timely management. It can reveal early variations in hair follicle diameter long before hair loss becomes clinically visible and helps in examining larger areas in a relatively short duration making it a practical choice for clinic set up. The findings can also be easily documented which allows the doctor and patient to view the images simultaneously and helps in evaluating a therapeutic response by comparing it with pre-treatment images. Moreover, it is relatively easy to acquire the skill and expertise needed for trichoscopy as it can be mastered by all those with a keen eye to observe. It definitely improves the quality of care of patients with alopecia and reduces the necessity of taking scalp biopsy specimens.

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