**RESEARCH ARTICLE**

# Videodermoscopy Evaluation in Non-scarring Alopecia of Scalp

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## ABSTRACT

**Introduction:** Hair is a versatile structure, and its importance has been linked to it in the beautification of human beings for ages. According to studies on the psychological impacts of androgenetic alopecia (AGA) in men, they are older, weaker, and less appealing. Hair loss in women gives significant stress and lowers self-confidence.

**Aim:** To perform videodermoscopic findings in non-scarring alopecia of scalp *versus* control volunteers.

**Material and Methods:** Total of 140 patients satisfied the study's inclusion criteria after a general medical examination, scalp examination (including inspection of the hair shaft and root), and hair anchoring and fragility tests. We examined the lesions with a videodermoscopy, took images, and wrote up our findings.

**Results:** The study found that patients averaged 26.85. Onset averaged 25.15 alopecia averaged 10.3 months. Our sample had 87.7% spotty AA.

**Conclusion:** Videodermoscopy is an effective non-invasive tool of considerable potential in dermatological practice. It is becoming popular as a hair loss differential diagnosis tool.

**Keywords:** Androgenetic alopecia, Non-scarring, Videodermoscopy, Perifollicular, Hair fall.

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## INTRODUCTION

Hair is a versatile structure and great importance has been linked to it in the beautification of human beings since ages. The loss of hair, along with other changes to one's hair, can have significant psychological and social consequences. Emotional implications of androgenetic alopecia (AGA) in men have been the subject of extensive research and the results suggest that men with receding are judged to be less competent, younger looking, and more physically unattractive than their non-balding peers.[1,2] Hair loss in women causes significant stress and lowers self-confidence. This incites them do try many different hair care products without knowing the primary cause, giving stimulus to the booming cosmetic products industry.[3]

As of yet, no efficient and easy methods exist for gaining a more holistic understanding of hair loss, which should be patient-friendly, painless and reproducible. Until now, most of the hair and scalp conditions were examined and treated based on a naked-eye clinical examination and hand-held magnifier of 4X magnification with improper lighting, which was subjective and based on skill of the clinician. The findings were mostly

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not recorded in digital media and hence were not reproducible. This compromised on follow-up and further management of the patients.[4,5]

A scalp biopsy is the only surefire way to diagnose hair loss diseases, which is painful and usually not accepted by patients. Scalp biopsy, one of the modalities of investigation, is an invasive procedure requiring a minor operation theatre setup and histopathology reading. The drawbacks included being invasive, unable to study the entire scalp and reduced patient compliance for a repeat biopsy. Pathologic findings are not always diagnostic, unfortunately. While the distinctive features of advanced androgenetic alopecia (AGA) in men are easy to spot, clinicians are often put to the test by patients in the nascent phases of AGA, where hair loss is apparent. Still, alopecia has not been diagnosed and where measuring the efficacy of treatment is difficult. As a result, a sensitive instrument for tracking hair loss and how well treatments are working is required.[6-8]

The last ten years have seen a consistent increase in medical technology developments. The pathophysiology of diseases can now be understood with greater ease as a result of this. So, work has been done to clarify some of the trichology field's grayer areas with the help of modern technology.[9,10]

With the increasing awareness about the cosmetology treatments available among patients and media available for information, a need to upgrade the non-invasive investigative tools has arrived for better understanding and appropriate treatment for hair loss disorders.[11]

Videodermoscopy is a tool that aids in hair and scalp disorder diagnosis and therapy. Videodermoscopy is medical equipment that can magnify scalp and hair images from 20X to 100X or more in a live demonstration over the computer monitor, which shows different patterns and findings in hair and scalp disorders that can be recorded, stored, transferred and reproduced for evaluation and follow up. It can be repeated as and when required as a simple OPD-based procedure that aids in accurately diagnosing hair and scalp conditions.[12,13]

Most of the studies and published articles available are based on a Western population, so a study is required in Indian patients. Further, this study will differentiate findings from the normal scalp to abnormal ones.

### Aim and Objectives

To perform videodermoscopic findings in non-scarring alopecia of scalp *versus* control volunteers.

## MATERIAL AND METHODS

This study was conducted in the outpatient department of dermatology and venereology at a private teaching hospital between January 2020 and June 2021 to compare the results of videodermoscopy in patients with non-scarring alopecia of the scalp to those obtained from volunteers in a control group.

There were 140 participants with androgenetic alopecia, alopecia areata, or telogen effluvium, and 40 healthy individuals who served as controls. History and a physical exam will be used to rule out participants with scarring alopecia. A scalp biopsy was done for histopathological examination as and when required. A videodermoscope of 50x magnification with a LED light and connectable to the computer hard disk drive with a USB cable was used to record videodermoscopic pictures. Each case and control included in the study was subjected to a detailed history taking for hair loss, medical illness and treatment history taking and examination with a videodermoscope was done following consent. A hair pull test was performed. Information was recorded on a proforma and clicked pictures from the videodermoscope was analyzed for findings and attached to the digital profile created on Microsoft word document of the patient on the computer.

### Statistical Analysis

All of the numbers were crunched in SPSS 13 for Windows. The variables in the study were described using descriptive statistics (number (n), minimum (m), maximum (m), mean (m), median (m), mode (m), and standard deviation (sd). Definition of IQR: The Difference Between the Middle and Upper Quartiles (i.e., $75^{th}$–$25^{th}$ Percentile)

Kruskal-Wallis Since one of the data tables did not pass the 'Normality' test, a One-Way Analysis of Variance on Ranks was performed. Two groups, such as case and control, were compared using a cross-tabulation with the Pearson ($chi^2$) test to analyse differences in two categorical variables. In order to determine if more than two groups have the same mean on a continuous variable, an analysis of variance is performed. An associated p-value of 0.05 was taken as indicative of statistical significance.

### Sample Size Calculation

Sample size was estimated by using the proportion alopecia (common cause) of nonscarring alopecia detected by videodermoscopy.

## RESULTS AND DISCUSSION

"Hair" is the crowning glory of the human body. Its symbolic and psychosocial importance can be estimated by the large number of patients who present in dermatology clinics with hair loss complaints. The departure from accepted cultural norms regarding this cosmetic asset leads to much distress and industrial activity.

The patients' mean age was 26.85 (46 men and 20 women) (Tables 1 and 2). The average onset age was 25.15. The average time someone had alopecia was 10.3 months. The patchy form of AA was the most common in our sample (57/66, or 87.7%). At most, 24 patients had a single patch, while 33 had several.

**Table 1:** Distribution of the cases of conditions

| *Conditions* | *Number* | *Percentage* |
|---|---|---|
| Alopecia areata | 30 | 21.4% |
| Androgenetic alopecia | 40 | 28.6% |
| Telogen effluvium | 30 | 21.4% |
| Control | 40 | 28.6% |
| Total | 140 | 100.0% |

Fifteen percent of the patients had diffuse AA. Two patients were diagnosed with ophiasis and two patients with alopecia universalis. Alterations to the nails included smooth pitting,[4] smooth ridging,[2] and a reduction in nail plate thickness.[2] One patient had each of the following conditions: coarse pitting, striate leukonychia, distal onycholysis, and dystrophy. The majority of dermoscopy observations were yellow dots (81.8%), followed by black dots (44 patients, 66.6%), broken hairs (36 patients, 55.4%), short vellus hair (27 patients, 40.9%), and tapering hairs. (8 patients, 12.1%).

In our study alopecia areata 93.3% had yellow dots and 6.7%. In alopecia areata subjects 50% had black dots. In alopecia areata 56.6% had small vellous hairs. Sixty percent of people with alopecia areata had hair that looked like an exclamation point. In alopecia areata 16.6% had brown peripilar sign.

In two separate studies, Lacarrubba F *et al.* examined 150 individuals with AGA and 140 individuals with severe AA. The clinical findings of both groups were confirmed using pull tests and trichograms. The third group consisted of fifty individuals whose hair loss had no apparent cause. Each group had videodermatoscopy with magnifications ranging from 20x to 600x.[14]

In a different study, Lacarrubba F *et al.* compared two groups: one containing 100 patients with AGA and the other consisting of Two hundred patients with acute (140) and chronic (60) AA. In both cohorts, pull tests and trichograms confirmed the clinical diagnosis. Fifty people who had hair loss that was otherwise clinically unexplained made up the third group. Videodermatoscopy was conducted with magnifications ranging from 20x to 600x across all groups[13,14].

Patients with acute AA (n = 140) showed three distinct videodermatoscopy patterns: (i) "Exclamation point" and "cadaveric" hairs (n = 62); (ii) "vellus" hairs (n = 38), with enhanced proximal shaft thickness and pigmentation in some cases; and (iii) coexistence of all the traits from I and (ii) (ii). [n = 40]. On videodermatoscopy, patients with chronic AA (n = 60) and, most notably, those who had recently advanced from acute AA (n = 35), exhibited a thin, smooth scalp with obvious follicular holes. Long-term, chronic AA (n = 25) was observed to be associated with the formation of keratotic plugs in hair follicles. The correlation between the two follicular patterns and disease severity, if any, remains unclear. Videodermatoscopy has shown hair regrowth in some people with chronic AA; this might be consistent, signaling early sickness remission (upright'vellus' hairs), or it can be sparse, thin and twisted vellus hairs, which commonly fall out after a few weeks. The ratio of miniaturized hairs to normal hairs was considered a prognostic trait in AGA patients, and it could be accurately assessed using videodermatoscopy observation. AGA with generalized hair thinning (n = 20), scarring alopecia (n = 10), and mild alopecia areata (n = 20) were all diagnosed by videodermatoscopy.

The study concluded that videodermatoscopy is an effective method for evaluating hair loss (Table 5), especially for differentiating between early, transitional, and moderate forms of the condition. Using this method, a thorough, non-invasive examination of the skin and hair of the scalp can be performed quickly.

In our study a total of 140 subjects were studied, 30 alopecia areata, 40 androgenetic alopecia, 30 telogen effluvium and 40 controls, 88 Females and 52 Males.

Of the total 140 subjects, the cases were divided into Alopecia areata 30 (21.4%), androgenetic alopecia 40 (28.6%), telogen effluvium 30 (21.4%) and control cases 40(28.6%) (Tables 3 and 4).

In alopecia areata 93.3% had yellow dots. In androgenetic alopecia 57.5% had yellow dots. In telogen effluvium 16.7% had yellow dots. In controls, 7.5% had yellow dots.

In alopecia areata subjects 50% had black dots. In androgenetic alopecia 5% had black dots. In telogen effluvium and controls none of the subjects had black dots. The *p-value* was significant with a value of 5.64E-08 where E stands for 10 to the power of minus.

**Table 2:** Association of age (yrs) among the cases between- Alopecia areata, Androgenetic alopecia and Telogen effluvium groups

| *Condition* | | *Age (yrs)* | | | | | *Total* |
|---|---|---|---|---|---|---|---|
| | | *< 25* | *25 to 34* | *35 to 44 ^* | *45 to 54 ^* | *55 and> ^* | |
| Alopecia areata | Number | 8 | 10 | 9 | 3 | 0 | 30 |
| | % | 26.7% | 33.3% | 30.0% | 10.0% | 0.0% | 100.0% |
| Androgenetic alopecia | Number | 13 | 17 | 3 | 6 | 1 | 40 |
| | % | 32.5% | 42.5% | 7.5% | 15.0% | 2.5% | 100.0% |
| Telogen effluvium | Number | 7 | 13 | 7 | 1 | 2 | 30 |
| | % | 23.3% | 43.3% | 23.3% | 3.3% | 6.7% | 100.0% |
| Total | Number | 28 | 40 | 19 | 10 | 3 | 100 |
| | % | 28.0% | 40.0% | 19.0% | 10.0% | 3.0% | 100.0% |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square $ | 10.623 | 8 | 0.224 | Not significant |
| Pearson Chi-Square ^ | 2.25 | 4 | 0.690 | Not significant |

$ 6 cells (40.0%) have an expected count less than 5. ^ Column data pooled and Chi-Square Test reapplied.

In alopecia areata 56.6% had small vellous hairs. Androgenetic alopecia and telogen effluvium did not have any significant association with the small vellous hairs.

In Alopecia areata 60% of the subjects had exclamation mark hair (Figure 1). Exclamation mark hair was not seen in androgenetic alopecia, telogen effluvium and control subjects. *p-value* was significant with a value of 7.55E-12 (where E stands for 10 to the power of minus), showing a clear relationship of alopecia areata and exclamation mark hairs.

A distinct study used DermLite II pro to examine the scalps of 300 Asians with AA. This device can prevent light from reflecting from the skin's surface even without the use of immersion lubricants. Utilizing the Spearman rank-order correlation coefficient by rank test, each dermoscopy finding was correlated with either the progression or severity of the disorder. In a study[15], the sensitivity and specificity of diagnostic indicators for AA were determined.

Even though exclamation mark (EM) hair is pathognomonic for alopecia areata (AA), Ihminger *et al.* found that it can actually lead to a misdiagnosis of AA. Trichotillomania patients also exhibited the presence of the characteristic EM hairs. The EM hairs of two trichotillomaniacs and nine people with AA were compared under a microscope. In some cases, the tips of the EM hairs were frayed, while in others, they were blunt. The tips of AA EM hairs were more likely to be frayed (77.8%) than those of EM hairs from people with trichotillomania (82.2%). Although frayed EM hairs may be an early sign of Alzheimer's disease, they are not diagnostic in and of themselves[16].

In our study in alopecia areata 60% of the subjects had exclamation mark hair. Exclamation mark hair was not seen in androgenetic alopecia, telogen effluvium and control subjects. *p-value* was significant with a value of 7.55E-12 (where E stands for 10 to the power of minus) showing a clear relationship of alopecia areata and exclamation mark hairs.

In another study by Ozlem Karadag Kose *et al*. 144 subjects of alopecia were involved with similar control subjects. The Follicular features showed Breakage, flecking, and spotting were all more prevalent in AA than in the other alopecias. Only AA had hair that gradually thinned out towards the ends (Figure 2). Short vellus hairs were equally prevalent across all alopecia categories (Table 5). There was no discernible difference in the incidence of circular hairs or trichorrhexisnodosa between AA and PCAs. All AGA participants exhibited a wider range of hair diameters than is typical of the general population. Only in AGA were empty follicles and the peripilar sign observed. In AGA Yellow dots were seen in 30.5% (Table 6, Figure 3), black dots in 1.7% (Figure 4), hair diameter diversity in 100% of the patient's empty follicles in 52.5% and peripilar sign in 59.3% white dots were seen in 15.3% of the patients. In AA yellow dots were seen in 83.7%, black dots in 63.3%, tapering hairs in 42.9%, broken hairs in 57.1%, short vellous hairs in 46.9% and hair diameter diversity in 32.7%. In telogen effluvium yellow dots were seen in 21.1%, short vellous hairs were seen in 47.7% and hair diameter diversity were seen in 10.5%. Telogen effluvium did not manifest as black spots, thinning hair, or breaking hair.[17,18]

In our study alopecia areata 93.3% had yellow dots. In alopecia areata subjects 50% had black dots and 56.6% had small vellous hairs (Table 7). In Alopecia areata 60% of the subjects had exclamation mark hair. In alopecia areata 16.6% had brown peripilar sign (Table 8).

In our study brown peripilar sign were seen in androgenetic alopecia in 95% of subjects compared to 42.5% in control volunteers, 43.3% in telogen effluvium and 16.6% in alopecia areata, showing a significant association of brown peripilar sign in androgenetic alopecia. Yellow dots were seen in alopecia areata in 93.3%. In androgenetic alopecia 57.5% had yellow

**Table 3:** Statistics of various variables in control cases

| *Variables* | *Control* | | | | | | |
|---|---|---|---|---|---|---|---|
| | *No.* | *Mean* | *SD* | *Median* | *IQR* | *Minimum* | *Maximum* |
| Age (yrs) | 40 | 30.55 | 9.66 | 30.00 | 14.50 | 18.00 | 58.00 |

**Table 4:** Sex distribution among the cases between- alopecia areata, androgenetic alopecia and telogen effluvium groups

| *Condition* | | *Sex* | | *Total* |
|---|---|---|---|---|
| | | *Female* | *Male* | |
| Alopecia areata | Number | 17 | 13 | 30 |
| | % | 56.7 | 43.3 | 100.0 |
| Androgenetic alopecia | Number | 21 | 19 | 40 |
| | % | 52.5 | 47.5 | 100.0 |
| Telogen effluvium | Number | 25 | 5 | 30 |
| | % | 83.3 | 16.7 | 100.0 |
| Total | Number | 63 | 37 | 100 |
| | % | 63.0 | 37.0 | 100.0 |
| Controls | Number | 25 | 15 | 40 |
| | % | 62.5 | 37.5 | 100 |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square | 7.729 | 2 | 0.021 | Significant |

**Table 5:** Association of type of hair loss among the cases between-alopecia areata, androgenetic alopecia and telogen effluvium groups

| *Condition* | | *Type of Hair Loss* | | *Total* |
|---|---|---|---|---|
| | | *Diffuse* | *Localised* | |
| Alopecia areata | Number | 3 | 27 | 30 |
| | % | 10.0 | 90.0 | 100.0 |
| Androgenetic alopecia | Number | 40 | 0 | 40 |
| | % | 100.0 | 0.0 | 100.0 |
| Telogen effluvium | Number | 30 | 0 | 30 |
| | % | 100.0 | 0.0 | 100.0 |
| Total | Number | 73 | 27 | 100 |
| | % | 73.0 | 27.0 | 100.0 |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square | 86.301 | 2 | 1.82E-19 | Significant |

**Table 6:** Association of yellow dots among the cases between- alopecia areata, androgenetic alopecia and telogen effluvium groups

| *Condition* | | *Yellow Dots* | | | | *Total* |
|---|---|---|---|---|---|---|
| | | *Absent* | *< 20% ^* | *20 to 50% ^* | *> 50% ^* | |
| Alopecia areata | Number | 2 | 17 | 8 | 3 | 30 |
| | % | 6.7 | 56.7 | 26.7 | 10.0 | 100.0 |
| Androgenetic alopecia | Number | 17 | 22 | 1 | 0 | 40 |
| | % | 42.5 | 55.0 | 2.5 | 0.0 | 100.0 |
| Telogen effluvium | Number | 25 | 5 | 0 | 0 | 30 |
| | % | 83.3 | 16.7 | 0.0 | 0.0 | 100.0 |
| Total | Number | 44 | 44 | 9 | 3 | 100 |
| | % | 44.0 | 44.0 | 9.0 | 3.0 | 100.0 |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square $ | 49.341 | 6 | 6.37E-09 | Significant |
| Pearson Chi-Square ^ | 35.843 | 2 | 1.65E-08 | Significant |

$ 6 cells (50.0%) have expected count less than 5. ^ Column data pooled and Chi-Square Test reapplied.

**Table 7:** Association of black dots among the cases between- alopecia areata, androgenetic alopecia and telogen effluvium groups

| *Condition* | | *Black Dots* | | *Total* |
|---|---|---|---|---|
| | | *Absent* | *< 20%* | |
| Alopecia areata | Number | 15 | 15 | 30 |
| | % | 50.0 | 50.0 | 100.0 |
| Androgenetic alopecia | Number | 38 | 2 | 40 |
| | % | 95.0 | 5.0 | 100.0 |
| Telogen effluvium | Number | 30 | 0 | 30 |
| | % | 100.0 | 0.0 | 100.0 |
| Total | Number | 83 | 17 | 100 |
| | % | 83.0 | 17.0 | 100.0 |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square | 33.381 | 2 | 5.64E-08 | Significant |

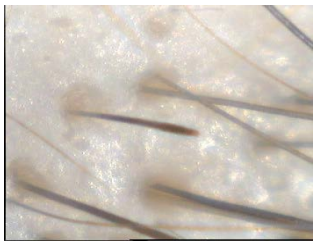

**Figure 1:** Exclamation mark hair in alopecia areata

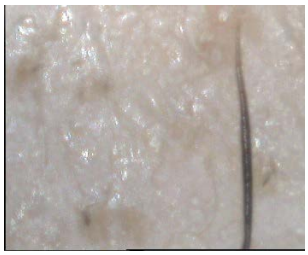

**Figure 2:** Tapering hair in alopecia areata

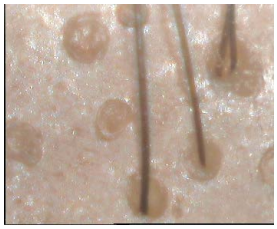

**Figure 3:** Yellow dots in alopecia areata

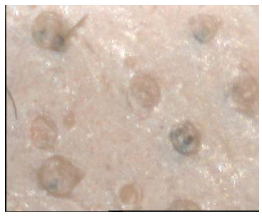

**Figure 4:** Black dots in alopecia areata

dots. In telogen effluvium 16.7% had yellow dots. In controls 7.5% had yellow dots.

Inui S utilizes a DermLite II pro or Epilight 8 to discuss the trichoscopic features of common hair loss diseases. Black dots, tapering hairs (exclamation mark hairs), broken hairs, yellow patches, and short vellus hairs are all characteristic trichoscopic findings of alopecia areata. Trichoscopic features such as hair follicle dilation (HDD), perifollicular pigmentation/peripilar sign, and yellow patches are diagnostic of androgenetic alopecia (AGA). Vellus transformation, indicated by an HDD more than 20%, is present in all cases of AGA and female AGA. The disappearance of hair follicle openings alongside other changes such perifollicular erythema or scaling and hair tufts characterizes cicatricial alopecia (CA). Finally, we propose an algorithm for trichoscopic analysis.[19]

In our study a videodermoscope of 50*magnification from medicam company with a LED light and connectable to the computer hard disk drive with a USB cable through which videodermoscopic pictures can be recorded is used.

**Table 8:** Association of brown peripilar sign among the cases between- alopecia areata, androgenetic alopecia and telogen effluvium groups

| *Condition* | | *Brown Peripilar Sign* | | | | *Total* |
|---|---|---|---|---|---|---|
| | | *Absent* | *< 20% ^* | *20 to 50% ^* | *> 50% ^* | |
| Alopecia areata | Number | 25 | 4 | 1 | 0 | 30 |
| | % | 83.3 | 13.3 | 3.3 | 0.0 | 100.0 |
| Androgenetic alopecia | Number | 2 | 21 | 12 | 5 | 40 |
| | % | 5.0 | 52.5 | 30.0 | 12.5 | 100.0 |
| Telogen effluvium | Number | 17 | 11 | 1 | 1 | 30 |
| | % | 56.7 | 36.7 | 3.3 | 3.3 | 100.0 |
| Total | Number | 44 | 36 | 14 | 6 | 100 |
| | % | 44.0 | 36.0 | 14.0 | 6.0 | 100.0 |

| *Chi-Square tests* | *Value* | *df* | *p-value* | *Association is-* |
|---|---|---|---|---|
| Pearson Chi-Square $ | 49.943 | 6 | 4.83E-09 | Significant |
| Pearson Chi-Square ^ | 45.482 | 2 | 1.33E-10 | Significant |

$ 5 cells (41.7%) have expected count less than 5. ^ Column data pooled and Chi-Square Test reapplied.

In another study by Rakowska A *et al.* female androgenetic alopecia and telogen effluvium was studied. Compared to the patients with female AGA, they had considerably less hair thickness in the frontal, occipital, left temporal, and right temporal regions than healthy controls.

Perifollicular discoloration was more common in women with AGA compared to healthy controls and patients with chronic telogen effluvium. Discolored follicle borders were found in 32.4+4.7% of frontal hair follicles (p0.001) and 6.6+2% of occipital hair follicles in women with AGA (p0.001).[20-25]

In another study by Inui S, Nakajima T *et al.*, androgenetic alopecia (AGA; n = 50 males) and female androgenetic alopecia (FAGA; n = 10 women) were studied dermoscopically and their prevalence was determined. Due to the fact that Asian skin tone covers minor peripilar pigmentation, the current study's incidence was lower than that recorded in white patients. Just 26% (13/50) of AGA instances and 10% (1/10) of FAGA cases had yellow dots, with both types of AGA and FAGA being restricted to no more than 10 yellow dots across the entire area of hair loss. The yellow dots represent the possibility that AGA and sebaceous gland enlargement share a shared end-organ hypersensitivity to androgen. In conclusion, dermoscopy aids in the diagnosis of AGA and FAGA and sheds light on the causes of AGA.[26, 27]

In our study brown peripilar sign were seen in androgenetic alopecia in 95% of subjects compared to 42.5% in control volunteers, 43.3% in telogen effluvium and 16.6% in alopecia areata, showing a significant association of brown peripilar sign in androgenetic alopecia.[28-32] Yellow dots were seen in alopecia areata in 93.3%. In androgenetic alopecia 57.5% had yellow dots. In telogen effluvium 16.7% had yellow dots. In androgenetic alopecia 95% had brown peripilar sign compared to 42.5% in controls, 16.6% in alopecia areata and 43.3% in telogen effluvium. In controls, 7.5% had yellow dots. *p-value* was significant with a value of 6.37E where E stands for 10 to the power of minus. The relationship of yellow dots was 93.3% in alopecia areata and 7.5% in control subjects.[33-36]

## CONCLUSION

Videodermoscopy has great potential as a non-invasive, effective tool in dermatology. As a supplementary method for determining the cause of hair thinning, it is rising in favor. Patients are more likely to cooperate with doctors if they know their condition can be diagnosed without invasive procedures like a scalp biopsy, and videodermoscopy has proven to be a beneficial tool for doing just that. Clinical study of scalp and hair diseases with videodermoscopy enhances diagnostic power beyond visual examination alone and exposes fresh signs of disease that may deepen our understanding of both the clinical and pathogenetic aspects of these conditions. They continue to serve as a useful and easy tool for clinicians to use in their daily work.

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