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Clinical profile and dermoscopic findings in alopecia areata

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ABSTRACT

Background: Alopecia areata (AA) is a common, chronic, and inflammatory disease that causes non-scarring hair loss. Dermoscopy can be used not only to diagnose AA and differentiate other causes of patchy alopecia but can also be a useful tool in assessing the severity of the disease. **Aim and Objectives:** The aim of the study was to study the clinical profile, various dermoscopic findings, and correlation between different dermoscopic findings and disease severity of AA. **Materials and Methods:** It was a cross-sectional descriptive study including clinically diagnosed cases of AA attending the outpatient department of dermatology. A detailed history and clinical examination was done along with dermoscopy of lesion and the patterns were noted. **Results:** A total of 117 patients were included in study. About 44% patients had mild AA, 48% had moderate, and 8% had severe alopecia. Patients with atopy and family history had an early onset of disease. Family history, presence of diabetic mellitus, and nail changes were associated with severe disease. The most common dermoscopic finding noted in our study was black dots followed by short vellus hairs, broken hairs, yellow dots, and tapering hairs. Yellow dots correlated positively with severity of AA while black dots, broken hairs, and short vellus hairs correlated negatively with the severity of AA. There was no relation between tapering hairs and severity of AA. **Conclusion:** AA is a disease of younger age. Black dots are the most common dermoscopic findings and along with this other patterns can be useful in diagnosis and assessment of severity of disease.

Key words: Alopecia areata; Black dots; Short vellus hair; Tapering hair; Yellow dots

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INTRODUCTION

Alopecia areata (AA) is a common and chronic inflammatory disease of the scalp which lead to nonscarring alopecia.[1] It occurs in any age and equally in males and females. Clinically, the disease manifests as patchy alopecia (single/multiple), reticulate alopecia, ophiasis, sisaipho, alopecia totalis, or alopecia universalis. Diagnosis is easy by clinical examination. However, in certain types such as diffuse AA, AA incognito,[2] and few cases of trichotillomania; the clinical diagnosis may be difficult and dermoscopy can be an useful aid. Dermoscopy is useful in assessing disease severity also.[3] Hence, this study was done to identify the clinical profile of AA, dermoscopic features, and the correlation between dermoscopic features and disease severity.

Aims and objectives

The objectives of the study are as follows:

1. To study the clinical profile of AA in patients attending Department of Dermatology and Venereology, Government Medical College, Kottayam.
2. To study various dermoscopic findings of AA in these patients.
3. To study the correlation between different dermoscopic findings and disease severity of AA.

MATERIALS AND METHODS

The study was conducted at Department of Dermatology and Venereology, Government Medical College, Kottayam after getting permission from SRC and IRB, for a period of 18 months from December 2018 to May 2019. It was a

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cross-sectional descriptive study. All patients with a clinical diagnosis of AA who satisfy the inclusion criteria were included in study group. A detailed history was elicited and the clinical examination findings including clinical pattern, extent, and severity of AA were noted.

The severity of disease was assessed as:[4]

- Mild: Three or less patches of alopecia with a widest diameter of 3 cm or less or the disease limited to the eyelashes and eyebrows.
- Moderate: Existence of more than three patches of alopecia or a patch greater than 3 cm at the widest diameter without alopecia totalis or alopecia universalis.
- Severe: Alopecia totalis or alopecia universalis.

Dermoscopy was done with a handheld dermoscope DermLite DL3N. Features such as black dots, tapering hairs, broken hairs, yellow dots, short vellus hairs, and others if any in the areas of hair loss were noted and photos taken. Routine investigations such as hemoglobin, total and differential leucocyte count, and special tests such as thyroid function tests and blood sugar were done in all cases. VDRL was done to rule out syphilitic alopecia in indicated cases.

Data were entered in Microsoft Excel and analyzed using SPSS software 17.

Statistical analysis done using unpaired t-test, Chi-square test, and ANOVA test.

RESULTS

A total of 117 patients were enrolled in study. The age of the patients ranged from 6 to 66 years. The majority of patients were between 21 and 40 years (54%). Children constituted 9.4% in our study. The mean age of patients at presentation was 28.69±12.79 years. Among the 117 patients, 69 (59%) were males and 48 (41%) were females. The male: female sex ratio was 1.4:1. The majority of patients (68.37%) who presented to our OPD had developed the present episode of AA in the preceding 6 months. Ten patients had the disease from 6 months to 1 year. There were 12 patients whose present illness started 2 years back. The mean age of onset of AA was 26.36±10.83 years. Stress was noted in 20 patients (17%) in our study. Of the 117 patients, 40 patients (34%) had taken some form of the treatment. Of this, topical steroid was the most commonly used mode of the treatment in 36 patients (30.8%). History of atopy was present in 38 out of 117 (32%) patients, that is, one-fourth of the study group had atopic dermatitis, bronchial asthma, or allergic rhinoconjunctivitis. The mean age of onset of AA in patients with atopy was 22.10±9.80 years and in those without atopy was 28.40±10.75 years. The early age of onset of AA with atopy was statistically significant (P=0.003).

About 26 (22.22%) out of the 117 patients had other comorbidities. The most common illness was preexisting thyroid disease which was seen in 14 patients (12%). Eight patients had diabetes mellitus (6.8%). Six patients were on the treatment for hypertension (5.1%). Three patients had hypercholesterolemia (2.6%). About 16 patients (14%) had a family history of AA in our study.

In our study, mean age of onset in patients with a family history of AA was 34.44 years compared to 25.08 years in patients having no family history of AA. This difference was statistically significant (P=0.001). Among the 117 patients, scalp was the most commonly reported site of involvement. Among the 117 patients, the most common type of involvement was multiple patch in 72 patients (61.5%) followed by single patch in 31 patients (26.5%). About 71 patients (60.68%) had only three or less than three patches. About 30 patients (25.64%) had 4–6 patches. Three patients had ≥10 lesions. Two patients had ophiasis pattern. Alopecia totalis and alopecia universalis were seen in three and six patients, respectively. Extensive AA (EAA) was seen in three patients. About 44% of patients had mild disease, 48% had moderate disease, and 8 % of patients had severe AA (Figure 1).

About 20 patients (19%) had nail involvement. The most common nail finding was fine nail pitting noticed in 13 patients. Longitudinal ridging was seen in seven patients, trachyonychia in three, leukonychia in two, and onycholysis in one patient (Table 1). In our study, nail findings were more common with multiple patchy AA compared to single patch. About 27.3% of patients with nail involvement were having mild disease, 31.8% of patients were having moderate disease, and 40.9% patients were having severe disease. Nine out of nine patients (100%) with severe

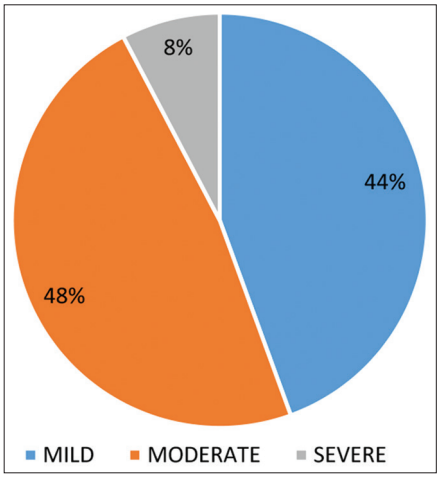

Figure 1: Severity of Alopecia areata

disease were having nail involvement. This difference was statistically significant (P<0.001) (Table 2).

Pitting was seen in 66.7% of patients with severe AA compared to only 7.7% and 5.4% of patients with mild and moderate AA and this difference was statistically significant (P<0.001). Similarly, leuconychia, trachyonychia, and onycholysis were also seen more in patients with severe AA and this was also statistically significant. Longitudinal ridging did not show any statistically significant association with severity of AA. In our study, atopy was present in 30.8% of patients with mild disease, 33.9% of patients with moderate disease, and 33.3% of patients with severe disease. The difference between the groups was not statistically significant (P=0.939).

The most common dermoscopic finding noted in our study was black dots in 77.8% patients followed by short vellus hairs in 65%, broken hairs in 58.1%, yellow dots in 34.2%, and tapering hairs in 16.2% (Figure 2).

Black dots were seen in 80.8% of patients with mild disease and 80.4% of patients with moderate disease compared to only 44.4% of patients with severe disease. This decreased incidence in severe disease was statistically significant (P=0.043).

Yellow dots were seen in 100% patients with severe AA compared to only 30.8% and 26.8% of patients, respectively, with mild and moderate AA. This was statistically significant (P<0.0010). Broken hairs and short vellus hairs were not seen in any patients with severe disease and this finding was statistically significant (P<0.001).

Table 1: Nail changes in patients with AA

Nail changes	Frequency (n)	Percentage
Pitting	13	11.1
Longitudinal ridging	7	6.0
Trachyonychia	3	2.6
Leukonychia	2	1.7
Onycholysis	1	0.9

AA: Alopecia areata

Table 2: Relationship between nail changes and severity of alopecia

Severity of AA	Nail changes				Chi-square test P value
	Yes		No		
	No: pts	%	No: pts	%	
Mild	6	27.3	46	48.4	<0.001
Moderate	7	31.8	49	51.6	
Severe	9	40.9	0	0.0	
Total	22	100.0	95	100.0	

AA: Alopecia areata

Tapering hairs were seen in 23.1%, 10.7%, and 11.1%, respectively, in mild, moderate, and severe AA and this difference was not statistically significant (P=0.200) (Table 3).

About 4 patients (3%) had anemia. All four patients had microcytic hypochromic anemia. After complete history taking, examination, and investigations, thyroid dysfunction was present in 16 patients (14%). Two of these were newly detected as part of this study. Eight were having overt hypothyroidism, four were subclinical hypothyroidism and four were having overt hyperthyroidism.

About 8 patients (7%) has diabetes mellitus in our study. Diabetes mellitus was seen in 33.3% of patients with severe disease compared to lower incidences in mild and moderate disease. This difference was statistically significant (P=0.004).The difference in the incidence of thyroid disease in patients with mild, moderate, and severe AA was not statistically significant (P=0.738).

DISCUSSION

In our study, age of patients with AA ranged from 6 to 66 years. The youngest patient reported by Sharma et al., was an infant of 8-months-old and the oldest was 65 years.[5] Goh et al., reported a wider range of patients from 2 to 90 years compared to this study, with a mean age of 36.3 years.[6] In our study, the mean age of patients at presentation was 28.69±12.79 years. In a study by Hegde et al., mean age of presentation was 26.94 years.[7]

The mean age of onset of AA in our study was 26.36±10.83 years, compared to 23.58 years in a study by Hegde et al.[7] We found that the highest frequency of disease was in the age group 21–30 years (29.9%), followed by 31–40 years (23.9).

Children constituted 9.4% (n=11) in our study, which was lower than reported by Sharma et al., (24%).[5] Mean age

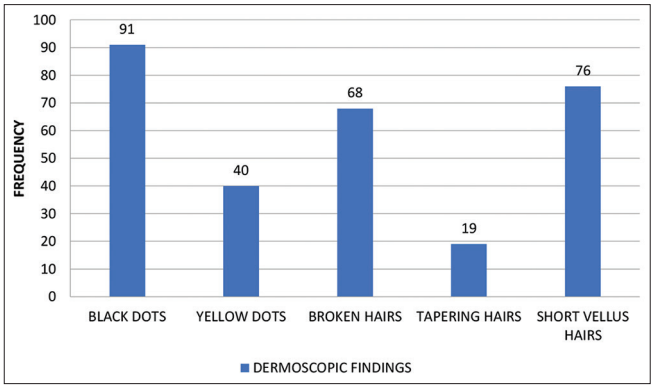

Figure 2: Dermoscopic findings in Alopecia areata

Table 3: Relationship between dermoscopic findings and severity of AA

Dermoscopic findings	Severity of AA						Chi-square test P value
	Mild		Moderate		Severe		
	No: pts	%	No: pts	%	No: pts	%	
Black dots							0.043
Yes	42	80.8	45	80.4	4	44.4	
No	10	19.2	11	19.6	5	55.6	
Yellow dots							<0.001
Yes	16	30.8	15	26.8	9	100.0	
No	36	69.2	41	73.2	0	0.0	
Broken hairs							0.001
Yes	30	57.7	38	67.9	0	0.0	
No	22	42.3	18	32.1	9	100.0	
Tapering hairs							0.200
Yes	12	23.1	6	10.7	1	11.1	
No	40	76.9	50	89.3	8	88.9	
Short vellus hairs							<0.001
Yes	35	67.3	41	73.2	0	0.0	
No	17	32.7	15	26.8	9	100.0	

AA: Alopecia areata

of onset in children in our study was 9 years, compared to 5.7±2.8 years in a study by Nanda et al.[8]

Sex distribution of patients differed among studies. In our study, the male: female ratio was 1.4:1, similar to study by Sharma et al., which showed a male preponderance (M: F – 2:1).[5]

In our study, 80 out of 117 patients (68.37%) presented in the first 6 months of onset of illness and 27 patients (23.07%) presented with a total duration of illness more than 1 year. This was similar to study by Sharma et al., where 62.1% presented in the first 6 months.[5]

In our study, stress was noted in 17% of the patients before the onset of alopecia. In a study by Manolache and Benea more than 65% of cases experienced stressful events compared to 22% of controls.[9] Atopy was present in 38 of the 117 patients, that is, nearly one-third of the study group (32%). A higher frequency of 39% had been noted by Barahmani et al.[10] In a study by Mishra et al., atopy was seen only in 10% cases, a lower frequency compared to our study.[11] Muller and Winkelmann and Ikeda in their respective studies found that patients with atopy had an earlier onset of disease.[12,13] In the present study, the mean age of onset of AA in patients with atopy was 22.10±9.80 years and in those without atopy was 28.40±10.75 years. This was statistically significant (P=0.003) showing that presence of atopy leads to an earlier age of onset of AA. However, the study by Sharma et al., showed no earlier age of onset of AA in atopics.[5] In a study by Barahmani et al., patients with history of atopy were at increased risk of having severe AA than milder forms.[10] Similar observations were seen in studies by Goh et al.[6] However, our study did not find any association between presence of atopy and severe forms of AA.

In this study, other frequently associated comorbidities were thyroid disease (13.6%), diabetes mellitus (6.8%), hypertension (5.1%), anemia (3.41%), and hypercholesterolemia (2.5%). Among the thyroid disease, the most common was hypothyroidism noted in 6.8% patients. Similar findings were noted in studies by Thomas and Kadyan with the most common comorbidity being thyroid disease, although the prevalence was higher at 18.3%.[14] The prevalence of diabetes was comparable to our study, but the incidence of anemia was higher (11.3%) and that of hypertension was lower (2.8%).[14] In our study, diabetes mellitus was present in 33.33% patients with severe alopecia compared to only 4.62% of patients with mild and moderate alopecia. This was statistically significant with P value of 0.004.

In our study, 16 patients (14%) had a family history of AA and the mean age of onset in these patients was 34.44 years compared to 25.08 years in patients having no family history of AA. This difference was statistically significant (P=0.001). This was in concordance with studies by Yang et al., which showed early onset of AA in patients with a positive family history.[15]

Family history was noted in 10 out of 108 patients (9.25%) with mild and moderate alopecia compared to six out of nine patients (66.66%) with severe alopecia. This was statistically significant with P<0.001, inferring family history of AA can result in severe AA. This was similar to the findings in Goh et al., study where severe AT/AU subtypes are associated with family history.[5] However, studies by Nanda et al., showed no association between severity of AA and family history.[8] In this study, most commonly reported site of involvement was scalp. It was involved in 103 (88.03%) patients of who three had

alopecia totalis. This pronounced involvement of scalp has been found in study by Sharma et al., where the scalp involvement was 77.6%, followed by beard in 20.9%, extremities in 14.5%, and eyebrows in 8.1%.[3] This was noted in study by Hegde et al., where the scalp involvement was seen in 73.3% cases.[7] Among the 117 patients, the most common type of involvement was multiple patch in 72 patients (61.5%). About 31 patients (26.4%) had single patch. Two patients had ophiasis pattern. Alopecia totalis and alopecia universalis were seen in three and six patients, respectively. EAA was seen in three patients.

Mishra et al., in their study of 70 patients noted patchy alopecia as the most common pattern in 88% patients. Alopecia totalis, alopecia universalis, and ophiasis pattern in three, six, and two patients, respectively.[11] Hegde et al., also reported that patchy AA was the most common, seen in 55 patients (73.3%).[7] In our study, 44% of patients had mild AA, 48% had moderate AA, and 8% of patients had severe AA. In studies by Thomas and Kadyan, mild disease was observed in 54% of the patients, moderate disease was observed in 34%, and severe disease in 10%.

In this study, 22 patients (18.80 %) had nail involvement. The most common nail finding was fine nail pitting, noticed in 13 patients (11.1%). Longitudinal ridging was seen in seven patients (5.9%). Three had trachyonychia and two had leukonychia and 1 had onycholysis.

In a study conducted by Mishra et al., 10% patients had nail involvement.[11] Similar to our study, nail pitting was the most common finding followed by longitudinal ridging. Studies conducted by Hegde et al., and Mane et al., also showed pitting as the most nail change associated with AA.[7,16]

A retrospective study of 200 patients by Kasumagic–Halilovic and Prohic found that nail changes were more frequent in patients with severe forms of AA (alopecia totalis and alopecia universalis (54.8%) than in circumscribed AA (19%).[17] In our study, all 9 cases (100%) of severe AA had nail involvement compared to only 13 out of 108 patients (12.035%) with mild and moderate AA. This was statistically significant with P<0.001. Pitting was seen in 66.7% of patients with severe AA compared to only 7.7% and 5.4% of patients with mild and moderate AA, respectively. This difference was statistically significant (P<0.001) showing pitting an indicator of severe AA. Similarly, leuconychia, trachyonychia, and onycholysis were also seen more in patients with severe AA and this was also statistically significant. Longitudinal ridging did not show any statistically significant association with severity of AA.

The most common dermoscopic finding noted in our study was black dots in 77.8% patients followed by short vellus hairs in 65%, broken hairs in 58.1%, yellow dots in 34.2%, and tapering hairs in 16.2%. This was similar to the studies by Hegde et al., where black dots (84%) were the most common finding followed by short vellus hairs in 68% and the least common finding being tapering hairs seen only in 18.67% patients.[7]

However, in studies by Mane et al., the most common dermoscopic finding was yellow dots seen in 81.8% patients followed by black dots in 67.7% patients. The least common finding was tapering hairs in 12.1% which was similar to our study.[16] Inui et al., also noted yellow dots as the most common dermoscopic finding.[3] The lesser occurrence of yellow dots may be due to the difficulty in appreciating this in darker population. In our study, black dots were seen in 80.8% of patients with mild disease and 80.4% of patients with moderate disease compared to only 44.4% of patients with severe disease. This decreased incidence in severe disease was statistically significant (P=0.043). Black dots were more common in less severe types of AA, and therefore, negatively correlate with severity of AA. This was in contrary to the study by Inui et al., where black dots correlated positively with severity of AA. Studies by Mane et al., did not find any association between BDs and severity of AA.[16]

Yellow dots were seen in 100% patients with severe AA compared to only 30.8% and 26.8% of patients, respectively, with mild and moderate AA. This is statistically significant (P<0.0010) showing yellow dots as a marker of severity of AA correlating positively with severity. This was consistent with the findings of Inui et al.[3]

Broken hairs and short vellus hairs were not seen in any patients with severe disease and this finding was statistically significant (P<0.001). This showed that they correlate negatively with severity of disease. This was consistent with the finding seen in Inui et al., study.[3] However, no association was found in studies by Mane et al.[16]

Tapering hairs were seen in 23.1%, 10.7%, and 11.1%, respectively, in mild, moderate, and severe AA and this difference was not statistically significant (P=0.200). This showed that there is no correlation between tapering hairs and severity of AA. This is consistent with findings of Inui et al., and Mane et al.[3,16]

CONCLUSION

AA is a disease of younger age and an early onset seen in individuals with atopy and family history. Multiple patches with moderate severity are the most common presentation. Family history, presence of diabetes mellitus, and nail changes are associated with severe disease. Nail pitting

is the most common nail change. Hypothyroidism is the most common comorbidity associated and all patients should be screened for it. Dermoscopy show well defined patterns and black dots are the most common finding and its presence indicates mild disease. Short vellus hairs and broken hairs are also seen in mild disease and yellow dots are seen in severe disease. Hence, dermoscopy can be a useful tool in diagnosis of AA and also in identifying the severity of disease to assess the prognosis.

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ASO- Preparation of manuscript, searching literature, and statistical analysis; MV- Concepts and preparation of manuscript; AR- Concept and statistical analysis

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