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Original Article

Clinical, dermoscopic and histopathological assessment in patients of alopecia areata: A hospital based cross-sectional study

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Abstract

Background Alopecia areata is a common, non-scarring, autoimmune, chronic inflammatory disease involving the hair follicles, characterized by hair loss on scalp and/ or body.

Objective To study clinical, dermoscopic and histopathological findings in patients of alopecia areata.

Materials and Methods Fifty consecutive patients attending dermatology outpatient department of a tertiary care hospital over a period of 2 years with clinical features suggestive of alopecia areata were selected. Detailed history, clinical examination followed by dermoscopy and skin biopsy taken from the margin of an active lesion. The data was analyzed, tabulated and mean, standard deviation and percentages wherever needed were calculated.

Results The Commonest age group affected was 21-30 years (46%). Males 41 (82%) were affected more than females 9(18%). Scalp 41(82%) was the most common site involved, followed by beard area 8(16%). According to classification based on extent and pattern of hair loss, localized patchy alopecia 49(98%) was the most common type, followed by alopecia totalis 1(2%). However, no case of alopecia universalis was encountered during our study period. Patchy alopecia with multiple patches (more than 3), seen in 23 (46%) patients, was the most common type. Nail pitting was the most common nail change noted in 13(26%) cases. The most common dermoscopic finding in our study was decreased anagen: telogen (A:T) ratio 43(86%), followed by yellow dots 42(84%), black dots 37(74%), short vellus hair 24(48%), broken hair 18(36%), dystrophic hair 16(32%), tapering hair 6(12%) etc. The most common histopathological finding in our study was decreased A:T ratio seen in 43(86%), followed by peribulbar infiltrate 36(72%), follicular keratinous plugs 32(64%), dystrophic hairs 30(60%), miniaturized hair 22(44%) etc.

Conclusion This study reaffirms the male predisposition, predominant scalp involvement and nail pitting as the most common findings. Dermoscopy can aid in the diagnosis of alopecia areata and may obviate its need in diagnosis.

Key words
Alopecia areata, black dots, dermoscopy, histopathology, Yellow dots.

Introduction

Alopecia areata (AA) is a common form of non-scarring alopecia involving the scalp and/or body,[1] characterized by hair loss without any clinical inflammatory signs. It was first described by Cornelius Celsus, and the term AA was coined by Sauvages in 1760. It accounts for

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25% of all the alopecia cases seen by dermatologists. Both the sexes are equally affected[2] while children constitute approximately 20% of patients with AA.[3] Genetic predisposition, autoimmunity, and environmental factors play a major role in its etiopathogenesis.

Clinically, AA commonly presents as localized, well-demarcated patches of hair loss involving any area of body, scalp being the most common site (90%). It may present as single or multiple patches showing characteristic exclamation mark hairs at the periphery of an active lesion. AA can be classified depending upon the extent and pattern of hair loss.

Dermoscope is a non-invasive, diagnostic tool which visualizes subtle clinical patterns of skin lesions and undersurface skin structures not normally visible to unaided eye by magnification. Characteristic dermoscopic features of AA are yellow dots, black dots, broken hairs, tapering hair (exclamation marks), and short vellus hairs.[4-7]

On histopathology, AA is characterised by predominant peribulbar lymphocytic infiltration. Follicular miniaturization, lymphocytes, eosinophils and melanin in fibrous tracts are other common findings useful in establishing the correct diagnosis.[8] This study was carried out to assess the clinical, dermoscopic and histopathological findings in alopecia areata.

Material and Methods

This cross sectional observational study was conducted at the post graduate Department of Dermatology, Peoples Education Society (PES), Institute Of Medical Sciences and Research Centre, Andhra Pradesh, India for a period of 2 years from March 2012 to March 2014. Ethical Clearance for the study was obtained from the institutional ethical committee.

Fifty sequential cases with clinical features suggestive of AA were taken up for the study. Detailed history including age, sex, duration of disease, site of involvement, type of lesions (according to pattern and extent classification of AA), nail changes, dermoscopic findings were noted. Dermoscope used was "USB Digital Microscope" from Fulcrum Co, magnification 10x, Zoom x20 to x200, without an interface solution (dry dermoscopy) and findings were noted. The images were taken through dermoscope and stored in the connecting computer. This was followed by skin punch biopsy (5mm) taken from the edge of latest and active lesion.

Patients already receiving treatment for AA were excluded from study. Consent regarding the publication of data and photographs of the patients was given by all the patients included in the study. The data thus obtained, was tabulated and analyzed for mean, standard deviation and percentages, wherever needed.

RESULTS

A total of 50 patients were enrolled for the study. Males 41(82%) were affected more than females 9(18%) **(Table 1)**. Commonest age group affected was between 21-30 years (46%) followed by 31-40 years (18%), and 11-20 years (16%) **(Table 2)**. Scalp 41(82%) was most the common site involved, followed by beard area 8(16%) **(Table 3)**. Some patients were having more than one site involved.

Table 1 Sex distribution in alopecia areata.

Sex	*No.*	*%*
Male	41	82
Female	9	18
Total	50	100

Table 2 Age distribution in alopecia areata.

Age	*No.*	*%*
0-10	5	10
11-20	8	16
21-30	23	46
31-40	9	18
41-50	5	10
Total	**50**	**100**

Table 3 Involvement of body sites in alopecia areata.

Site	*No.*	*%*
Scalp	41	82
Beard	08	16
Moustache	03	06
Eye brows	01	02

Table 4 Type of alopecia areata depending upon the extent of involvement

S.No	*Types of AA*	*No.*	*%*
1	Circumscripta/ Localized	49	98
2	Alopecia Totalis	1	2
3	Alopecia Universalis	0	0
	Total	50	100

Table 5 Morphological classification of alopecia areata.

S.No	*Morphological type*	*No.*	*%*
1	Patchy	43	86
2	Reticulate	2	4
3	Patchy & Reticulate	2	4
4	Patchy & Ophiasis	2	4
5	Reticulate & Ophiasis	1	2
	Total	50	100

Table 6 Classification based on number of patches of alopecia areata.

S.No	*No. of patches*	*No.*	*%*
1	One	06	12
2	Two	08	16
3	Three	13	26
4	> Three	23	46
	Total	50	100

Table 7 Dermoscopic findings in alopecia areata.

S.No	*Dermoscopic findings*	*Positive*	*%*
1	Yellow dots	42	84
2	Black dots	37	74
3	Short vellus hair	24	48
4	Decreased A:T ratio	43	86
5	Broken hair	18	36
6	Dystrophic hair	16	32
7	Tapering hair	6	12
8	Others: white dots, Coudability hairs, etc.	4	8

Table 8 Histopathological findings in alopecia areata.

S.No	*Dermoscopic findings*	*Positive*	*%*
1	Follicular keratinous plugs	32	64
2	Dystrophic hair	30	60
3	Miniaturized hair follicle	22	44
4	Decreased A:T ratio	43	86
5	Peribulbar infiltrate	36	72
6	Others	14	28

According to classification based on extent of alopecia, AA circumscripta 49(98%) was the most common type, followed by AA totalis 1(2%) **(Table 4)**. However, no case of AA universalis was encountered during our study period.

According to classification based on pattern of hair loss, Patchy AA was the most common type found in 43(86%) patients **(Table 5)**. Among the patients with patchy AA, more than 3 patches were found in 23(46%) patients followed by 3 patches in 13 (26%), etc. **(Table 6)**. Reticular AA was seen in 2(4%) cases **(Table 5)**.

Nail changes were seen in 20 (40%) patients. Nail pitting was the most common nail change noted in 13(26%) cases. It was commonly seen in cases with multiple patch AA. Other findings like longitudinal ridging, Beaus lines, Leuconychia and Onychorhexis were noted in 1(2%) case. Another 6(12%) cases had combined Nail pitting and other findings.

The most common dermoscopic finding in our study was decreased anagen: telogen (A:T) ratio which was seen in 43 (86%) cases, followed by Yellow dots 42 (84%), Black dots 37 (74%), Short vellus hair 24(48%) etc. **(Table 7)**.

On histopathological examination, the commonest finding in our study was decreased A:T ratio found in 43(86%) patients, followed by peribulbar infiltrate 36(72%) and follicular keratinous plugs in 32(64%) cases **(Table 8)**.

Discussion

AA affects both males and females equally. The present study shows male preponderance (82%), as reported in earlier studies.[9-12] The maximum incidence of AA was in age group of 21-30 (46%). In a study by Wasserman D *et al.*,[3] 20% of cases were children, and 60% of AA patients had their first patch before 20 years of age. Scalp was the most common site involved in the present study (82%). Other sites (beard area, moustache, eye brows etc.) were involved in 18% of the cases. Study by Seetharam K *et al.*[13] shows similar results where scalp involvement was seen in about 90% of cases. The most common site involved next to scalp was beard area (44%), followed by moustache (16%), and eyebrows (5%). Another 32% of patients had involvement of more than one site. Similar findings were reported in earlier study by Muller S *et al.*[14]

The most common type of lesion was localized variety/AA circumscripta (98%) in our study, followed by alopecia totalis (2%), similar to previous studies by Ikeda T[15] and Sharma V *et al.*[16] where patchy type was seen in about 80-90% cases.

The most common pattern of arrangement of AA patches was patchy (86%), in our study. Similar findings were reported earlier by Ikeda T.[15] The most common nail change observed in the present study was nail pitting (26%), followed by other findings like Longitudianl ridging, Beaus lines, Leuconychia and Onychorhexis in about 2% of cases. In a study by Sato Kawamura M[17] nail pitting was found in about 28% of the cases similar to our study.

The most common dermoscopic finding in our study was decreased A:T ratio (86%), followed by Yellow dots (84%) and Black dots (74%), etc. Yellow dots were found in 84% of cases in our study, 81.8% and 94% in studies by Mane *et al.*[6] and Ross *et al.*[18] respectively. Black dots were found in 74% in our study, and 66.6% in a study by Mane *et al.*[6] Broken hair (36%), tapering hair (12%) and short vellus hair (48%) in our study when compared to Mane *et al.*[6] where it was 55.4%, 12.1% and 63% respectively.

Yellow dots and short vellus hair are most sensitive markers, and black dots, tapering hair and broken hair are the most specific markers of the disease and they correlate positively with disease activity.[5] Yellow dots represent dilated follicular infundibula filled with keratinous plugs, Black dots represent dystrophic hair shafts which project up and appear black irregular dots while white dots represent fibrous tracts which develop following recurrent and chronic episodes of AA

Most common histopathology finding in our study was decreased A:T ratio(86%), followed by peribulbar infiltrate (72%), follicular keratinous plugs(64%), etc. Similar findings were noted in a study by Steven J, *et al.*[19]

Conclusion

This study reaffirms the male predisposition, predominant scalp involvement and nail pitting as the most common findings. Patchy alopecia with more than 3 patches is the most common presentation. Dermoscopy can aid in the diagnosis of alopecia areata and may obviate its need in diagnosis.

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