

## Original Research Article

# Clinical trends of scalp alopecia areata: a tertiary care hospital based observational study

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**Received:** 23 October 2019

**Accepted:** 05 December 2019

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### ABSTRACT

**Background:** Alopecia areata is one of the commonest types of non-scarring alopecia involving the scalp and/or body. As there is paucity of recent epidemiological data from our country, this study was conducted to determine the latest clinical and epidemiological trends of scalp alopecia areata.

**Methods:** A hospital-based observational study consisting of 100 cases of clinically diagnosed scalp alopecia areata who reported to the Dermatology OPD, Dr. D.Y. Patil Medical College, Pune, was conducted for a period of six months. Socio-demographic and clinical information was collected and clinical examination was performed on all patients. The data was evaluated using appropriate statistical methods.

**Results:** Out of the 100 cases enrolled, males (64%) outnumbered females (36%). The commonest presenting age group was 21-30 years (44%). Disease onset was sudden in 80% patients and 59% cases had a progressive disease course. Majority (75%) had a disease duration of less than 3 months. Majority cases were asymptomatic (80%) with no precipitating factors (90%). Past history and family history of alopecia areata were present in 13% and 9% cases, respectively. Personal and family history of associated diseases were present in 27% and 22% patients, respectively. Most patients had single (61%), patchy (83%) lesions with occiput (45%) being the commonest initial site. Nail changes were present in 22% cases, of which pitting (13%) was the commonest nail finding.

**Conclusions:** This study reflects the clinical profile of scalp alopecia areata in a tertiary care hospital.

**Keywords:** Alopecia areata, Alopecia areata pattern, Alopecia areata nail changes, Scalp

### INTRODUCTION

Alopecia areata (AA) is a common type of non-scarring alopecia involving the scalp and/or body. It is characterized by loss of hair in the absence of any clinical inflammatory signs. Though its first description was given by Cornelius Celsus, but the name 'Alopecia Areata' was coined by Sauvages in 1760.<sup>1</sup>

The disease presents as localized patches of hair loss, with well demarcated borders, on normal appearing skin.

Its commonest site is scalp, involved in 90% cases. The scalp hair loss pattern could be patchy, diffuse, reticular or band-like lesion over occipital area (ophiasis) or forehead (saisaiph). These may progress to alopecia totalis (loss of all scalp hair) or universalis (loss of all body hair).<sup>1</sup>

According to the Western literature, it is one of the commonest forms of hair loss observed by dermatologists and constitutes 25% of all the alopecia cases with 60% patients manifesting their first patch before the age of 20

years. Its prevalence is variable in different parts of world.<sup>1</sup> So we cannot rely on Western data. In a previous North Indian study by Sharma et al, the incidence of alopecia areata was reported as 0.7%.<sup>2</sup> As there is paucity of recent data from our country, this hospital-based observational study was conducted to determine the latest clinical and epidemiological trends of alopecia areata of scalp.

## METHODS

This hospital-based observational study consisted of 100 cases of scalp alopecia areata who reported to the Outpatient Department Clinic of Department of Dermatology, Dr. D.Y. Patil Medical College, a tertiary care medical teaching institute in Pune, Maharashtra from October 2018 to March 2019.

All clinically diagnosed patients of scalp alopecia areata who consented to participate in the study were included. Socio-demographic and clinical information, including age, sex, disease onset, course and duration, associated symptoms, precipitating factors, initial site of lesion, duration of nail changes, if any, previous history of similar disorder, family history, history of associated diseases in the patient or family were recorded.

A complete clinical examination of patients was performed in good light with stress upon the morphology of each lesion, which included number of alopecic patches, sites involved and pattern of AA, nail changes, associated dermatological conditions and other diseases. All data was recorded in a predesigned proforma.

The statistical analysis was performed using the SPSS software version 20.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were presented as measures of central tendency such as mean and standard deviation and categorical variables were presented as absolute numbers and percentage. Observations were analyzed using the Chi square test, Z test and proportion test, wherever applicable. For all statistical tests, a p value less than 0.05 was considered significant.

## RESULTS

Out of the 100 cases included in the study, a male preponderance (64%) was noted with male to female ratio being 1.78:1. The age of the patients varied from 10-50 years, with a mean age of onset being 26.89 years. Commonest presenting age group was 21-30 years (44%) followed by 31-40 years (32%). The youngest patient was 10 years old while the age of the oldest case was 49 years (Table 1).

Eighty-three per cent cases reported a sudden onset of hair loss, while others (17%) had a gradual loss of hair. Duration of disease was variable but 75% patients presented within 3 months of disease onset, the earliest presentation being at 1 week. None of the patients had a

disease duration of more than 2 years. The mean disease duration was recorded as 2.71 months. A progressive disease course was noted in 59% cases while 28% and 13% patients had a static and regressive course of the disease, respectively.

**Table 1: Age and sex distribution.**

Age group (years)	Males	Females	Total (%)
10-20	9	11	20
21-30	34	10	44
31-40	18	14	32
41-50	3	1	4
<b>Total</b>	<b>64</b>	<b>36</b>	<b>100</b>

Majority (80%) cases reported no symptoms associated with the AA patches. However, few reported mild itching (16%) and burning (4%) at the lesional sites. No precipitating factor was found in 90% patients, while remaining 10% attributed the disease to emotional stress in the form of a death or an accident in the family.

Majority (73%) patients had no associated dermatological or systemic disease. Atopy was the commonest associated disorder present in 14% cases, followed by thyroid disorders and vitiligo, present in 6% and 3% cases, respectively. Other diseases (hypertension, psoriasis and anemia) were present in 4% patients.

Past history of AA was present in 13% cases while a positive family history was present in 9% patients only. Associated diseases were present in families of 22% patients, commonest being diabetes mellitus (9%) followed by atopy (7%) and hypertension (4%). Family history of vitiligo and thyroid disorders were present in 1% cases each.

Majority (61%) patients had a single patch of AA, while amongst others, 29% cases had two lesions. Remaining patients presented with multiple patches (Table 2).

**Table 2: Number of alopecia areata patches.**

Number of patches	Total (%)
<b>One</b>	61
<b>Two</b>	29
<b>Three</b>	6
<b>Four</b>	1
<b>Five</b>	3
<b>Total</b>	<b>100</b>

Occipital region was the most common initial site of the lesions seen in 45% cases followed by vertex (33%), temporal (12%) and frontal (10%) areas. Even in patients having multiple AA lesions, occiput was the most common site involved (48%) followed by vertex (43%) (Table 3).

**Table 3: Initial site of involvement.**

Initial site of involvement	Total (%)
Frontal	10
Temporal	12
Vertex	33
Occiput	45
<b>Total</b>	<b>100</b>

The most common pattern of AA observed in the patients was patchy (83%) (Figure 1), followed by diffuse (6%) (Figure 2). Only a few cases had reticulate (4%), ophiasis (3%) and sisaipho (4%) patterns.



**Figure 1: Patchy pattern of alopecia areata.**



**Figure 2: Diffuse pattern of alopecia areata.**

**Table 4: Nail changes in alopecia areata patients.**

Nail changes	Total (%)
Pitting	13
Beau's line	2
Trachyonychia	5
Onychorrhexis	2
Absent	78
<b>Total</b>	<b>100</b>

**Table 5: Association of nail changes with duration of alopecia areata.**

Parameter	Nail changes				Z value	P value
	Yes (n=22)		No (n=78)			
	Mean	SD	Mean	SD		
<b>Duration (months)</b>	7.83	5.491	1.58	1.015	9.74	<0.0001*
<b>Median (IQR)</b>	5.5	5-8	1.50	0.94-2		

\*p<0.0001, therefore result is statistically significant.

Majority of the patients (78%) had no associated nail changes. The commonest nail change being nail pitting was present in 13% of patients (Table 4). It was noted that patients with associated nail changes had a significantly (p<0.0001) longer duration of disease (Median=5.5 months) than patients without nail changes (Median=1.5 months) (Table 5).

## DISCUSSION

Alopecia areata, is a reversible type of non-scarring alopecia, which involves the scalp and/or body and is characterized by hair loss in the absence of any clinical inflammatory signs. It is a condition with multifactorial etiology and associations. In this study, 64% patients were males and 36% were females thereby depicting a male preponderance with a male to female ratio of 1.78:1. Similar findings have been reported by Sharma et al and Kaur et al with a male:female ratio of almost 2:1 and 2.3:1 in their studies, respectively.<sup>2,3</sup>

In this study, commonest presenting age group was 21-30 years (44%) followed by 31-40 years (32%). Children (10-20 years) constituted 20% of the population, while only 4% cases were above 40 years of age. The youngest patient was 10 years old while the age of the oldest case was 49 years. The mean age in the study population was 26.89 years. Kaur et al had noted comparable results in their study, with majority (35%) cases in the age group of 20-29 years and only 4% cases were in 40-49 years age group which showed decreasing incidence with age.<sup>3</sup> Similarly another study stated that 85.5% of the Asian patients with AA have disease onset before 40 years of age.<sup>4</sup> Thus, according to literature, the highest prevalence of AA is between the second and fourth decades of life.<sup>5</sup>

Majority (83%) cases reported a sudden onset of hair loss in the study, with disease progression in the form of increase in the size of the existing lesions or appearance of new patches since the onset, present in 59% cases; while disease course was static and regressive in 28% and

13% cases, respectively. This suggests that the immunological insult against the hair follicles is an ongoing process and few patients may progress to alopecia totalis or universalis. Fahim et al noted similar findings in their study, with progressive, static and regressive disease courses in 68%, 24% and 8% cases, respectively.<sup>6</sup> Similarly, many others have reported that hair loss patches in AA, are often suddenly noticed and may progress circumferentially.<sup>1,7,8</sup> But the disease course is unpredictable because spontaneous regrowth can occur in many cases, with majority (85%) having more than one episode.<sup>1,9</sup> 50-80% cases show spontaneous remission within one year, especially in cases of limited disease, while few may have disease persisting for a longer time and others may never recover hair.<sup>1</sup>

The duration of the disease was found to be extremely variable. It varied from one week to a few years with a mean duration of 2.71 months. Majority (75%) patients presented within 3 months of disease onset. The earlier presentation may be attributed to the psychological distress of the patients. 22% and 3% cases presented between 3 to 12 months and between 12 to 24 months of disease onset, respectively. Fahim et al observed comparable results in their study, with 76% patients presenting within 3 months of disease onset.<sup>6</sup>

In this study, majority (80%) cases were asymptomatic at presentation. However, few complained of mild itching (16%) and burning (4%) at the site of AA patches. Sharma et al reported that 13.9% cases had transient itching, preceding the appearance of alopecia.<sup>2</sup> Finner and Strazzulla et al, have mentioned about occasional patients describing some itching, tingling or dysesthesia, at times preceding the hair loss, though majority cases were symptomless.<sup>7,9</sup>

No precipitating factor was found in 90% of the patients. Ten percent of the patients reported emotional stress in the form of trauma due to death or an accident in the family as a precipitating factor. Sharma et al reported a few precipitating factors seen in 15.1% patients, amongst which emotional stress was the commonest.<sup>2</sup> According to a study, anxiety and depression are highly prevalent among AA patients. However, action of stress is mostly at the molecular level associated with stress hormone secretion that increases the inflammation rather than as a direct cause.<sup>10</sup>

Majority of the patients (73%) had no associated dermatological or systemic disease. It was found that atopy was the commonest associated condition (14%), while thyroid disorders and vitiligo were present in 6% and 3% cases respectively. Other diseases (hypertension, psoriasis and anemia) were present in 4% patients.

Sharma et al and Muller et al, recorded atopy to be present in 18% and 11% of their AA cases, respectively.<sup>2,11</sup> This is comparable to our study. Previous studies reported association of AA with atopy in 10-22% cases, twice the prevalence seen in general population.<sup>1,12</sup>

Kranselar et al have mentioned about an increased overall risk of other autoimmune conditions at least in 16% AA patients.<sup>13</sup> Thyroid disorders and vitiligo are the two most strongly related autoimmune conditions to AA. Fricke et al found thyroid function abnormalities in 8.9% AA cases, while Hordinsky et al have reported vitiligo to occur in 3% to 8% of AA cases compared to 1% in the general population of US.<sup>12,14</sup> Previous studies have found an incidence rate of 2.3% for thyroid disorders and 4.1% for vitiligo in AA cases.<sup>4,8,9</sup> These results are comparable to this study.

Sharma et al found 1% cases to be hypertensive in their study.<sup>2</sup> This finding corroborates with this study as well.

In this study, 13% cases had past history of AA. It has been noted in literature as well that most patients (85%) have more than one episode of AA.<sup>1,12</sup> and that in most cases, AA has a chronic but mild course with episodic patches.<sup>9</sup>

Ninety-one per cent cases did not have a family history of AA while a first-degree relative was affected in the remaining 9% patients. Similarly, Sharma et al noted family history of AA in 9% cases with nine patients having more than one affected family member.<sup>2</sup> The occurrence of AA in identical twins, siblings and families with several affected generations indicates that AA has a heritable basis.<sup>15</sup> According to previous data, family members are affected in 8.7-20% of cases, with a 10-fold increased risk in first-degree relatives to develop AA and the concordance rate in monozygotic twins is found to be 55%.<sup>1,11,7,16</sup>

In the present study, of the 22% cases with positive history of associated diseases in the family, diabetes mellitus was most commonly observed (9%), followed by atopy (7%), hypertension (4%), vitiligo (1%) and thyroid disorders (1%).

Sharma et al noted a family history of hypertension in 19.3%, diabetes in 13.6%, atopy in 6.8%, vitiligo in 5.9% and thyroid disorders in 1.2% cases, respectively.<sup>2</sup> A study by Wang et al confirmed that family members of AA patients have an increased incidence of diabetes, whereas the patients themselves have reduced incidence.<sup>17</sup> It has been proposed that patient developing AA, get protection against development of insulin dependent diabetes mellitus.<sup>2</sup>

It was observed that majority (61%) patients had a single lesion, while 29% cases had two lesions and remaining 10% had multiple patches. In the study conducted by Sharma et al, it was noted that 79.8% patients had a single patch, 12.5% patients had two patches while multiple patches were present in 7.7% cases. But there was no correlation between the number of patches and subsequent disease severity.<sup>2</sup> Previous literature suggests that AA may present as single or multiple patches.<sup>15,16</sup>

In this study, occipital region of the scalp was the initial site of lesion in 45% cases. Vertex was a distant second, involved in 33% cases followed by temporal (12%) and frontal (10%) regions. In patients having multiple AA lesions, occiput was the most common site involved (48%) followed by vertex (43%), temporal (21%) and frontal (20%) regions.

Sharma et al found out that occipital and temporal regions of the scalp were the commonest sites of primary lesions in their patients.<sup>2</sup> Other studies reported similar results with occipital region of the scalp being the commonest site involved.<sup>4,5,18</sup>

In the present study, the most common pattern of AA observed in the patients was patchy (83%), followed by diffuse (6%). Only a few cases had reticulate (4%), ophiasis (3%) and sisaipho (4%) patterns. Similar results have been observed in other studies as well. Sharma et al observed that reticular and ophiasis pattern of AA were present in 9.9% and 7.2% patients, respectively. But the majority patients had patchy AA.<sup>2</sup> Tan et al noted that 58% of adult cases had patchy hair loss.<sup>4</sup> Alkhalifah reported that patchy AA is the most common pattern, occurring in up to 75% of patients. Other patterns like reticular, diffuse, ophiasis and sisaipho are relatively less common.<sup>12</sup>

Majority of the patients (78%) had no associated nail changes. Nail findings were observed in 22% cases, wherein commonest was nail pitting (13%) followed by trachyonychia (5%) and Beau's lines and onychorrhexis in 2% cases each.

Patients with associated nail changes had a significantly ( $p < 0.0001$ ) longer disease duration (Median=5.5 months) than patients without nail changes (Median=1.5 months).

These findings corroborate with previous studies in which, the incidence of nail abnormalities in AA is found to range from 7% to 66%.<sup>19,21,22</sup> Sharma et al found nail abnormalities in 20% of adults and 50% of children with AA.<sup>2</sup> Nail changes commonly seen in AA are geometric pitting, geometric punctate leukonychia and trachyonychia (sandpaper nails). The other changes include Beau's lines, longitudinal ridging, onychorrhexis, onychomadesis, onychodystrophy and red lunulae.<sup>1</sup> Amongst these, nail pitting is the most common nail abnormality observed in AA.<sup>12,19,20</sup> According to previous data, nail abnormalities may either precede, occur concurrently or follow the hair loss. They may persist even after remission of AA. They are more frequent in severe and refractory AA.<sup>1,15</sup>

## CONCLUSION

To conclude, 100 patients of scalp alopecia areata were included in the present study, which depicted a male preponderance with majority cases in the age group of 21-30 years. The study further reflected upon the

importance of positive past and family history of the disease and presence of associated dermatological and systemic conditions in almost one-fourth cases. Majority patients presented with single patchy alopecia areata lesions with occiput being the commonest site involved. Nail pitting was the most common nail finding present in a small proportion of patients.

Thus, from the above data, it is well understood that scalp alopecia areata is a common problem in healthcare practice and a thorough knowledge of its recent clinical profile is required for better patient care. As this was a hospital-based study, further large-scale population-based studies are warranted to acquire a broad picture of the disease epidemiology.

## ACKNOWLEDGEMENTS

We would like to thank Dr. M.S. Deora, Professor and Head of Department of Dermatology, Venereology and Leprosy, for offering valuable advice and support by allowing us to access and utilize the clinical material and facilities. Authors would also like to thank Gen. (Dr.) Y.K. Sharma, Professor Emeritus, Department of Dermatology, Venereology and Leprosy.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

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**Cite this article as:** Singh P, Patvekar MA, Shah B, Mittal A, Kapoor A. Clinical trends of scalp alopecia areata: a tertiary care hospital based observational study. *Int J Res Dermatol* 2020;6:193-8.