

Clinico-epidemiological study of alopecia areata

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Abstract

Objective To evaluate the clinical and demographical pattern of alopecia areata (AA) and their association with other diseases.

Methods A cross-sectional multicentric study of 410 patients with AA was carried out during the period of January 2013 to December 2014. A detail clinical and demographical pattern of the disease was taken in a prescribed proforma along with the association of other diseases, if present.

Results A total of 410 patients with AA were included in the study with age ranging from 1 year to 74 years, out of which 206 were males and 204 females. The commonest age at onset was 21-30 years. Multilocular patches were the commonest presentation. Based on the pattern, patchy AA was most commonly seen, followed by ophiasis and sisiapho. Eyebrow involvement was common in the ophiasis group as compared to other types. Nail involvement was found in 45.4% patients and pitting was the most common finding. A history of previous episode of AA was present in 32.4% of patient. Severity of AA with increasing area of involvement was seen in the relapse group of patients. Scalp was the commonest hair bearing area of involvement (76.8%), as well as, was also the first site of involvement. In 12.7%, there was a past history of AA. The commonest associated disease was atopic dermatitis (5.8%). Other diseases like thyroid, vitiligo, diabetes, collagen-vascular disease etc. were also noted in our study.

Conclusion AA is a disease of the younger age group. We assessed the demographic profile of the patients and try to correlate it with other studies and hypothesis.

Key words

Alopecia areata, clinical features, epidemiology.

Introduction

Alopecia areata (AA) is an autoimmune disease presenting as a recurrent non scarring type of hair loss. Even though it is a benign condition, it can have tremendous emotional and psychological impact on the patients suffering from it.

Depending on the ethnic background and area of the world, the prevalence of AA is estimated to be 0.1 to 0.2%,¹ with a calculated life time risk of 2.1%.² There is generally no sex predilection, but some studies have shown that more men are affected than women.^{1,3-5}

AA is manifested as a well-defined, round to oval skin coloured patches of loss of hair, most commonly on the scalp and in the region of the beard, but any hair bearing area can be involved. AA can be classified according to the extent of

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involvement into patchy AA, alopecia totalis (AT), and alopecia universalis (AU). Depending on the pattern it can also be termed as patchy, ophiasis (hair loss affecting the occipital scalp) and sisaipho (ophiasis inversa). Recently AA has been classified into three clinical variants; acute, diffuse and total alopecia.^{6,7}

Even-though the etiopathogenesis of AA remains elusive, it is known to be determined by various factors. Autoimmunity is generally accepted as the major cause for it.^{2,8}

In this study, we have studied the clinical and demographic aspect of AA and their association with other diseases in the Indian population.

Methods

This is a multi-centric study done during the period of two years from January, 2003 to December, 2014, and a total of 410 AA patients were enrolled. The study was approved by the hospital ethical committee of Midnapur Medical College. The diagnosis of alopecia areata was made clinically. In doubtful cases 10% KOH mount was done to exclude fungal infection. Patients with confusing and ambiguous symptoms or with complication such as scalp inflammation were excluded from the study. A preformed proforma was maintained for all patients.

The patients were examined thoroughly to determine the affected sites, the morphological pattern, extent and severity of disease, and nail involvement. The clinical details of the patients were recorded which included demographic information (age, sex, address), age of onset, duration of disease, site of onset, sites affected, precipitating factors, previous treatment history, associated illness/diseases with more stress on atopic dermatitis, thyroid disease or any other diseases, and family history of AA.

Based on the extent of hair loss, patients were classified into monocularis, multilocularis, alopecia areata, alopecia barbae, alopecia areata totalis and alopecia areata universalis. AA was classified into patchy, ophiasis and sisaipho depending upon the pattern of hair loss. Statistical analysis was done using SPSS version software. Differences in proportion of categorical variables were assessed through the Chi-square test and Fisher's exact test. A *p* value less than 0.05 were considered as significant.

Results

A total of 410 patients were included during the study period, out of which 206 (50.2%) were males and 204 (49.8%) were females, and the age ranged from 1 year to 74 years (mean age 26.5 years). Out of 410 patients, a peak age of onset was in the ages 21-30 years (114 i.e. 27.8%) and was followed by 11-20 years of age (27.3%), (**Table 1**).

The severity of AA involvement in different age group is also demonstrated in **Table 1**; accordingly, 85.4% patients had an area of involvement less than 25%, which was the commonest pattern of AA seen in our patients. Based on the extent of AA, multilocularis patches found to be the commonest (59.5%) followed subsequently by monocularis (32.4%), totalis (4.4%) and universalis (3.2%) (**Figure 1, 2, 3**). Two patients had only involvement of the beard area (**Figure 4**). According to the pattern of involvement, 83.7% (343/410) had patchy AA, while 15.1% had ophiasis (**Figure 5**) and sisaipho (**Figure 6**) in 1.2%. The difference was statistically significant ($p=0.0023$). In the ophiasis group, eyebrow was involved in 27.4%, and in 76.9% of universal group of AA. Table 2 demonstrates eyebrow involvement with classification pattern of AA.

Table 1 Severity of AA percent involvement in age of onset

| Age at onset (years) | Percent area involvement | | | | Total |
|----------------------|--------------------------|-----------|-----------|-----------|-------------|
| | <25% | 25-49% | 50-74% | ≥ 75% | |
| ≤10 | 51 (14.6%) | 5 (17.9%) | 3 (13.0%) | 1 (11.1%) | 60 (14.6%) |
| 11-20 | 98 (28.0%) | 6 (21.4%) | 6 (26.1%) | 2 (22.2%) | 112 (27.3%) |
| 21-30 | 101 (28.9%) | 7 (25.0%) | 5 (21.7%) | 1 (11.1%) | 114 (27.8%) |
| 31-40 | 66 (18.9%) | 5 (17.9%) | 8 (34.8%) | 1 (11.1%) | 80 (19.5%) |
| 41-50 | 29 (8.3%) | 5 (17.9%) | 1 (4.3%) | 2 (22.2%) | 37 (9.0%) |
| 51+ | 5 (1.4%) | 0 (0.0%) | 0 (0.0%) | 2 (22.2%) | 7 (1.7%) |
| Total | 350 (85.4%) | 28 (6.8%) | 23 (5.6%) | 9 (2.2%) | 410 (100) |

Chi-square = 33.587, DF=15, p=0.0039

Table 2 Eyebrow involvement with classification pattern of AA

| Classification pattern of AA | Eyebrow involvement | | Total |
|------------------------------|---------------------|------------|-------------|
| | Yes | No | |
| Patchy | 49 (14.3%) | 294(85.7%) | 343 (83.7%) |
| Ophiasis | 17(27.4%) | 45(72.6%) | 62 (15.1%) |
| Saisapho | 1(20.0%) | 4(80.0%) | 5 (1.2%) |
| Total | 67(16.3%) | 343(83.7%) | 410 (100) |

Chi-square = 6.675, DF=2, p=0.0355

Table 3 Relationship between types of alopecia areata with nail involvement

| Nail involvement | Type of alopecia areata | | | | | Total |
|------------------|-------------------------|----------------|----------|-----------|-------------|-------------|
| | Monocularis | Multilocularis | Barbae | Totalis | Universalis | |
| Pitting | 27 (20.8%) | 89 (68.5%) | 1 (0.8%) | 6 (4.6%) | 7 (5.4%) | 130 (31.7%) |
| Trachyonychia | 6 (25.0%) | 17 (70.8%) | 0 (0.0%) | 1 (4.2%) | 0 (0.0%) | 24 (5.9%) |
| Beau's line | 0 (0.0%) | 1 (50.0%) | 0 (0.0%) | 0 (0.0%) | 1 (50.0%) | 2 (0.5%) |
| Onychorrhexis | 1 (16.7%) | 4 (66.7%) | 0 (0.0%) | 0 (0.0%) | 1 (16.7%) | 6 (1.5%) |
| Leuconychia | 4 (18.2%) | 16 (72.7%) | 0 (0.0%) | 1 (4.5%) | 1 (4.5%) | 22 (5.4%) |
| Red lanula | 2 (100.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 2 (0.5%) |
| No sign | 93 (41.5%) | 117 (52.2%) | 1 (0.4%) | 10 (4.5%) | 3 (1.3%) | 224 (54.6%) |
| Total | 133 (32.4%) | 244 (59.5%) | 2 (0.5%) | 18 (4.4%) | 13 (3.2%) | 410 |

Chi-square = 46.606, DF=24, p=0.0037

Table 4 Severity of alopecia areata by past episode.

| Percent area involvement | Past episode | | Total |
|--------------------------|--------------|-------------|-------------|
| | Yes | No | |
| <25% | 106 (30.3%) | 244 (69.7%) | 350 (85.4%) |
| 25-49% | 10 (35.7%) | 18 (64.3%) | 28 (6.8%) |
| 50-74% | 12 (52.2%) | 11 (47.8%) | 23 (5.6%) |
| ≥ 75% | 5 (55.6%) | 4 (44.4%) | 9 (2.2%) |
| Total | 133 (32.4%) | 277 (67.6%) | 410 (100%) |

Chi-square for trend = 6.830, DF=1, p=0.009

Table 5 Sex differences of site first involved.

| Site first involved | Female | Male | Total |
|---------------------|----------|-----------|------------|
| Beard | 2 | 51 | 53 (12.9%) |
| | 3.8% RT | 96.2% RT | |
| | 1.0% CT | 24.8% CT | |
| Chin | 0 | 2 | 2 (0.5%) |
| | 0.0% RT | 100.0% RT | |
| | 0.0% CT | 1.0% CT | |
| Eyebrow | 14 | 3 | 17 (4.1%) |
| | 82.4% RT | 17.6% RT | |
| | 6.9% CT | 1.5% CT | |

| Site first involved | Female | Male | Total |
|---------------------|-----------------------------|-----------------------------|-------------|
| Frontal part | 3 75.0% RT 1.5% CT | 1 25.0% RT 0.5% CT | 4 (1.0%) |
| Leg | 0 0.0% RT 0.0% CT | 2 100.0% RT 1.0% CT | 2 (0.5%) |
| Moustache | 1 5.6% RT 0.5% CT | 17 94.4% RT 8.3% CT | 18 (4.4%) |
| OCC | 16 50.0% RT 7.8% CT | 16 50.0% RT 7.8% CT | 32 (7.8%) |
| Scalp | 168 60.2% RT 82.4% CT | 111 39.8% RT 53.9% CT | 279 (68.0%) |
| Submandibular area | 0 0.0% RT 0.0% CT | 3 100.0% RT 1.5% CT | 3 (0.7%) |
| | 204 (49.8%) | 206 (50.2%) | 410 |

Chi-square=86.279, DF=8, $P < 0.0001$, RT: % of row total; CT: % of column total



Figure 1 Alopecia areata multilocularis.



Figure 2 Alopecia areata monolocularis



Figure 3 Alopecia totalis



Figure 4 Alopecia patch in beard region



Figure 5 Ophiasis



Figure 6 Sisaipho

Most of the patients were concerned for their disease and reported directly to a dermatologist, while 12 males and 25 females tried indigenous remedies like ayurvedic, ginger paste, homeopathic or onion juice before approaching a dermatologist.

Nail changes were observed in 186 (45.4%) patients, out of which pitting was the most common and was seen in 130 (31.7%) of them. It was common among the patients presenting with multilocularis type. **Table 3** demonstrates different nail involvement in different types of AA and this was statistically significant ($p=0.0037$).

Severity of AA by past episode is shown in **Table 4**. The history of past episode/relapse was noticed in 32.4% of patients. The severity of AA with past episode showed significant increase in tendency of increased percentage of area of involvement. It was noticed that those with more number of relapses were more psychologically depressed, as well. Scalp was found to be the most affected site (76.8%) followed by the beard area (12.9%).

On calculating sex differences with site first involved, it was found that 91.7% females and 62.2% of males had scalp as the first site involved and this was statistically significant (**Table 5**).

Positive family history of AA was noted in 12.7% (males: 32; females: 20) patients but was not statistically significant.

Regarding associated diseases, 8.8% patients were observed to have atopic dermatitis. Other disease associated were thyroid disorder (4.9%), vitiligo (2.4%), collagen vascular disease (2%), psoriasis (0.97%), bronchial asthma (0.97%) and hypertension (0.73%).

Discussion

Alopecia areata is a common disease but the etiology is still elusive even though it is now generally accepted that it is autoimmune in nature. The diagnosis of AA is mainly clinical and biopsy will generally confirm it. AA affects both sexes equally though in some studies there was a preponderance for males.^{3-5,7-9} Amongst our patients, both male and female were almost equally affected (50.24% and 49.8%, respectively). There are reports of AA being more prevalent in less than 20 years of age.^{1,10} In our patients, AA was more common among the age group 21-30 years which was similar to those reported by Manzoor *et al.*¹¹ The next increased severity of AA was observed between 11-20 years and in those over 40 years, respectively. Similar to other studies, patchy AA was the commonest type of AA.^{5,6} Nail changes are described in 7% to 66% of those with AA with nail pitting being the most common.¹²⁻¹⁶ In our study, nail involvement was 45.4% which was in concordance with the study done by Gandhi *et al.*¹³ who have noted nail changes in 44%. Nail pitting was the commonest nail involvement and was seen in those who had multilocularis type of AA. This was different from other studies where nail involvement in the form of pitting was commonly seen among those patients with severe forms of AA.¹⁻³ In our patients, recurrences/ relapses were associated with a larger area of involvement and these patients were also more likely to be psychologically depressed. Familial incidence of AA was noted in 12.7% of our patients which was similar other studies, as well.^{5,6,14,17,18} Among autoimmune disorders, thyroid autoimmunity has been described to be frequently seen in patients with AA with an incidence ranging from 8% and 28%, and vitiligo from 2.5% to 4.1%.^{4,8,16,19,20} The incidence of thyroid autoimmunity was low amongst our patients, similar to Sharma *et al.*¹ study. Atopic dermatitis

was observed in 8.8% of our patients which was similar to other studies as well.^{1,4} It has been observed that history of atopy or autoimmunity was associated with increased risk of AA.²¹ Knowing all the parameters in AA is useful to assess outcome of treatment, as there are few poor prognostic indicator which include ophiasis variant, early onset of AA in children, nail changes, positive family history and coexistence of other autoimmune diseases.^{16,21,22,23} A limitation of this study, we could not do skin biopsy in our patients due to financial burden and unwillingness.

Conclusion

AA is a benign autoimmune disorder of the hair follicle which showed 2 peak incidences in our study, 21-30 years age and 11-20 years. Recurrences/relapse is associated with a larger area of involvement. Scalp is the most common site of involvement and patchy type of AA, the commonest pattern. Familiar incidence of AA was not significant so also thyroid autoimmunity. Early onset, nail changes reflect the severity of AA.

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