

Original article:

A clinical study of alopecia areata in children at a tertiary care centre in Telangana state, India

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Abstract

Alopecia areata (AA) is a common cause for hair loss in children which causes considerable parental anxiety. It is common in age group 6-10 years, with male to female ratio being 1.67:1. Family history of AA was present in 27.5% of the subjects. The affected site is scalp being 97.5%, followed by face (30%). Occipital region was the most common site of scalp involvement. Patchy alopecia areata was the most common pattern observed in both males and females, followed by ophiasis. Ophiasis was the most common pattern of AA observed in atopic individuals. Duration of AA varied from 7 days to 2 years. In majority (82.5%) of the patients the duration was less than 6 months. Majority (71.8%) of the children had mild AA followed by moderate AA (25.64%) and severe AA (2.56%). Atopy was seen in 17.5% of subjects. Among them, 10% had atopic dermatitis, 5% had allergic rhinitis and 2.5% had asthma. Thyroid disorders were associated with 12.5% of the subjects. Nail changes were found in 27.5% of subjects, the commonest nail change being pitting. Nail changes were more common in moderate and severe AA. The results are discussed and communicated.

Key words: Alopecia areata, atopic dermatitis, thyroid disorder, ophiasis

Introduction

Alopecia areata (AA) is an organ-specific, T cell-mediated autoimmune disease that targets anagen hair follicles [1]. It is a reversible disease of hair follicles characterized by the spontaneous appearance of circumscribed areas of complete hair loss which, when severe, can result in loss of all scalp and body hair [2]. It can occur as patchy, confluent or diffuse patterns. AA is a common disease encountered by dermatologists [3,4]. The reported lifetime risk of developing AA has been estimated to be 1.7%.⁵ The disease shows a peak incidence between 20 and 50 years of age [6,7,8]. Pediatric alopecia areata is not uncommon. It constitutes approximately 20% of AA cases [8,10] and as many as 60% of patients with AA will present with a first patch before 20 years of age [11]. AA frequently occurs in

association with other autoimmune disorders such as atopic dermatitis, generalized vitiligo, lichen planus, lichen sclerosus et atrophicus, pemphigus foliaceus, Hashimoto's thyroiditis, hypothyroidism, endemic goiter, lupus erythematosus, diabetes mellitus, Down's syndrome and others [12,13,14]. It has been suggested that AA in atopic subjects tends to have an earlier age of onset and more severe than in non atopic subjects [15]. There are fewer studies on childhood AA and its association with atopy. Much of the evidence on pediatric AA is extrapolated from adult AA data. In the light of above observations the present study has been undertaken to document the clinical profile of AA. In the present study the clinical profile of alopecia areata in children is discussed.

The word "alopecia" is derived from the Greek word "Alopex", meaning "Fox mange".

Hippocrates first used the term alopecia. The first clinical description of alopecia areata as 'alopecia area', is attributed to Cornelius Celsus, who flourished in Rome in 14-37 AD [16]. Alopecia areata has been given many different names throughout history. Sauvages first used "alopecia areata" in his "Nosologica Medica", published in 1760 in Lyons, France [17]. Hypothesis of parasitic etiology was proposed by Willan and Gruby (1843). Epidemics of alopecia areata reported to occur in institutions such as orphanages and schools [18,19,20]. Attempts to isolate the organism have failed [21,22,23]. Von Baresprung and Jacquet proposed the neurotrophic theory for the disease.

Patients & methods

This is an observational study conducted from January 2014 to June 2015 (18 months) in Department of DVL of Gandhi hospital, Secunderabad, Telangana. Patients with alopecia areata who are less than 18 years age, presenting to dermatology OPD, are included in the study. All the patients with alopecia areata presenting to DVL OPD were included in the study with prior informed parental consent. Name, age, sex and detailed demographic data of the patient were recorded. A detailed history on duration of AA, chief complaints, skin lesions, onset and progression of lesions was elicited and recorded. Dietary history and family history were noted. History of atopy, thyroid disorders, diabetes, connective tissue disorders, autoimmune disorders and HTN in patients or other family members was taken. A detailed general and systemic examination was carried out and findings were noted. In Dermatological examination, size, surface, number, site of patch/patches, nail changes, pattern of hair loss and hair changes like exclamation mark hairs were noted. SALT scoring was done in all cases. Severity of AA was graded as mild (SALT Score less than 25), moderate (SALT Score 25-75) and

severe (SALT Score more than 75). Examination for other dermatological disorders was done. Patients were also examined for caries tooth. Routine investigations like, complete blood picture, absolute eosinophil count, liver function tests, blood sugar, blood urea, serum creatinine and thyroid profile were carried out in all patients.

Results and discussion

The present study comprised of 40 children with alopecia areata (AA) documented over a period of 18 months (January 2014 - June 2015) at a tertiary care centre in Telangana. Out of 40 children, 25 (62.5%) were males, 15 (37.5%) were females (Figure 1). Male to female ratio being 1.67:1. Sheik *et al.* [21] observed 72.5% of the patients were males and 27.5% were females. A study done by Jain *et al.* [22] showed 52.1% of the patients were males and 47.9% were females. Tan *et al.* [4] documented 58.33% of the patients to be males and 41.67% to be females. Sharma VK *et al.* [3] observed a female preponderance. In his study, 58.2% of the patients were females and 41.8% were males. Ahmed *et al.* [23] observed 47% males and 53% females in his study. Guruprasad *et al.* [24] observed a marginally higher incidence among female (53%) children. The differences may be attributed to various genetic and environmental factors. The age of the children in the study group ranged from 3 months – 15 years. In our study, majority (60%) of patients were in 6-10 years age group (Table 1) when compared to the studies done by Vishwanath *et al.* [25] (7-10 Years, 44%), Guruprasad *et al.* [24] (7-10 Years, 47%), Sharma *et al.* [3] (6-10 Years, 38.3%), and Saadeh *et al.* [26] (6-8 Years, 23%), Ahmed *et al.* [23] (6-10 years, 51%). Mean age of onset in our study was 8.73 years compared to the studies done by Ahmed *et al.* [23] (9.1 years), Vishwanath *et al.* [25] (6.64 years) and Nanda *et al.* [10] (5.7 years). In our study, 82.5% presented within 6 months of onset of AA (Figure

2). In a study done by Tan *et al* [4], 71.7% of children presented within 6 months of onset of lesions. Jain S *et al.*[22] also observed that 70% of children presented within 6 months of onset of lesions. Out of 40 children, 11(27.5%) had a positive family history of alopecia areata of which nine were males and two were females (Figure 3). Twenty (20 %) of cases showed family history of alopecia areata in a study by Guruprasad *et al.*[24] and Sharma *et al.*[3] observed that 12.4% children had one or more family members with Vishwanath *et al.*[25] reported a positive family history of 12% patients. Tan *et al.*[4] observed a familial history of AA in 8.4% of their patients. Xiao *et al.*[27] reported a positive family history of 11.06%. In a study done by Nanda *et al* [10], 51.6% had a positive family history of alopecia areata. From the above observations, it can be speculated that the effect of genetic factors is important in the occurrence of this disease. The differences may be attributed to various environmental factors which may play an important role for its manifestation. In our study, 36% of males and 13.33% of females had a family history of AA. In our study, scalp was the initial site of involvement in 39 (97.5%) children whereas the face was the initial site involved in one (2.5%) child. Occipital region was the most common site of onset for 16 (41.02%) cases followed by vertex in 10(25.64%) cases. In a study done by Vishwanath *et al* [25], occipital region was the site of onset in 52% of the patients. In our study, out of 40 children with AA, scalp was the only site involved in 28 (70%) children, face was the only site of involvement in one (2.5%) child whereas nine (22.5%) children had both scalp and face involvement, one (2.5%) child had scalp, face and truncal lesions and one child had complete body involvement (Table 2&3). In a study done by Sheikh *et al*[21], 70% had only scalp involvement, 5% had only face involvement, 15% had both scalp

and face involvement, 4% had scalp, face and truncal lesions and 6% had complete body involvement. Jain *et al.*[22] reported scalp involvement in 72.67%, 12.67% had AA without scalp involvement, 14.66% had involvement of both scalp and other areas. Saadeh *et al.*[26] reported scalp (82%) to be the predominant site of involvement. In our study, out of 40 children, 23 (57.5%) had multiple lesions and 17(42.5%) had only single lesion. In a study done by Vishwanath *et al.*[26], 16% cases had multiple lesions and 84% of cases had single lesions. In a study done by Jain *et al* [22], 64.66% cases had multiple lesions and 35.34% of cases had single lesions. Out of 39 patients with scalp involvement, occipital region (27.38%) was the most common site involved followed by parietal region (23.80%), vertex (19.04%), temporal (17.86%) and frontal region (11.90%)(Figure 4). Vishwanath *et al.*[25] reported occipital region (52%) as the commonest site of involvement in his study followed by vertex (32%). In a study by Guruprasad *et al* [24], occiput (48.7%) was the common site in children followed by vertex (38.4%). Jain *et al.*[22] reported parietal region (42%) as the commonest followed by occipital region (40%). In our study, children in 0-5 years age group, parietal region (33.33%) was the most common site involved followed by occipital (25%) and temporal region (25%). children in 6-10 years age group, occipital region (28.26%) was the most common site involved followed by parietal (21.73%) and vertex region (21.73%) (Figure 5& 6). In 11-15 years age group, occipital region (26.92%) was the most common site involved followed by parietal region (23.07%) (Figure 7). Vishwanath *et al.*[25] reported occipital area as most common site in less than 6 years old children. In his study, 7-10 years children presented an equal split of 36% each between temporal area and occipital area, while children more than 10 years

showed vertex as a primary site (40%). Out of 40 children, patchy AA was found in 22(56.41%) children, combined patchy and ophiasis was found in 7(17.95%), ophiasis was found in 6(15.38%), combined patchy and diffuse AA was found in one(2.56%) child and alopecia universalis, subtotal AA, reticular AA were found in one(2.56%) child each (Figure 7). Jain *et al.*[22] reported that 98.6% had only patchy AA and 1.4% had both patchy and ophiasis in their study.

Out of 11 children with face involvement in this study, both eyebrow and eyelashes were involved in six (54.55%), whereas only eyelashes were involved in 3 (27.27%) children and only eyebrows were involved in 2 (18.18%) children. Females (33.33%) had a higher proportion of nail involvement than males (24%). In our study, out of 40 children, 5 (12.5%) had hypothyroidism and 3 (7.5%) had iron deficiency anaemia. In our study, 62.5% children with AA showed exclamatory mark hair at the periphery of the lesions of which 68% were males and 53.33 were females indicating increased disease activity in males. Guruprasad *et al.*[24] found exclamatory mark hair in all patients of their study. Severity of AA in 39 patients with scalp involvement was assessed using the SALT (SEVERITY OF ALOPECIA TOOL) scoring system. 71.8% (28) of the children were having mild AA, 25.64% (10) were having moderate AA and only 2.56% (1) had severe AA. Out of 28 children with mild AA, 16 (57.14%) were males and 12 (42.86%) were females. Out of 10 children with moderate AA, 7 (70%) were males and 3 (30%) were females. One child with severe alopecia had alopecia universalis was male (9 years). In our study, higher proportion of males had moderate to severe forms of alopecia areata. Xiao *et al.*[27] reported majority of patients (84.96%) presented with limited alopecia. In their study, boys appeared to have more severe involvement. Tan *et*

al.[4] reported severe forms of AA in females. Nanda *et al.*[10] observed majority of the patients (80.5%) had mild disease, moderate disease was seen in 13% of the children and 6.5% had severe AA. High SALT score may indicate poor prognosis, and rate of spontaneous remission may be more common in low SALT score patients. Out of 28 children with mild AA, four (14.29%) belonged to 0-5 years age group, 15 (53.57%) belonged to 6-10 years age group, nine (32.14%) belonged to 11-15 years age group. Out of 10 children with moderate AA, one (10%) belonged to 0-5 years age group, six (60%) belonged to 6-10 years age group, three (30%) belonged to 11-15 years age group. One child with severe AA belonged to 6-10 years .Lower age groups (6-10 years) showed a higher proportion of moderate and severe Xiao *et al.*[27] also reported greater severity in lower age groups. Sharma ³*et al* could not find any association with severity and age of onset. Out of 28 children with mild AA, five (17.86%) had nail changes. Out of 10 children with moderate AA, five (50%) had nail changes. One child with severe AA had nail changes (Table 4). In our study, nail changes are more common in moderate and severe (Figure 8). Sharma.[3]*et al* found a significant association of nail changes with disease severity. Guruprasad *et al.*[24] observed that 53% had nail changes in children with severe alopecia areata. Out of 28 children with mild AA, eight (28.57%) had positive family history of AA. Out of 10 children with moderate AA, three (30%) had positive family history of AA. In our study, no association was found between severity of AA and positive family history. Similar to our study, Nanda *et al.*[10] also could not establish any association between severity of AA and positive family history. Out of 28 children with mild AA, six (21.43%) had eyebrow (EB) / eyelash (EL) involvement (Table 5, 6, 7 & Figure 9, 10, 11). Out of 10 children with

moderate AA, four (40%) had eyebrow/eyelash involvement (Figure 12&13). One child with severe AA had eyebrow/eyelash involvement. In

our study, the involvement of face was more common in severe forms of AA.

Figure 1: Sex distribution in Alopecia areata

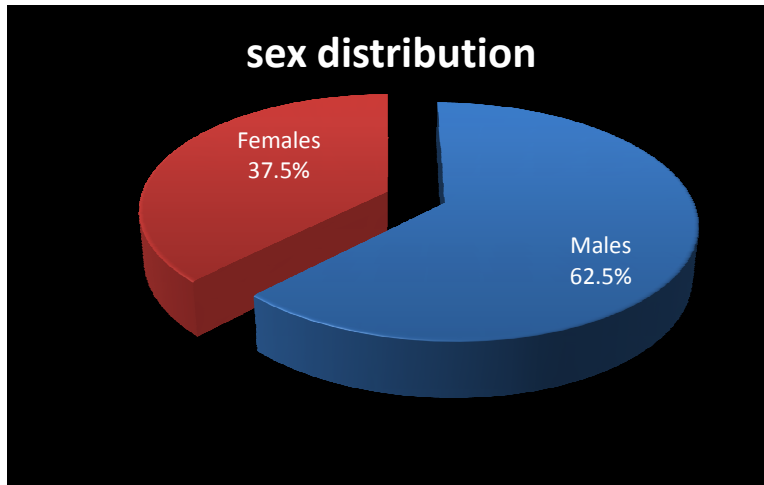


Table 1: Agedistribution in Alopecia areata

Age group	Male	Female	Total	Percentage
0-5 years	3	1	4	10%
6-10 years	13	11	24	60%
11-15 years	9	3	12	30%
Total	25	15	40	

Figure 2: Duration of illness in Alopecia areata

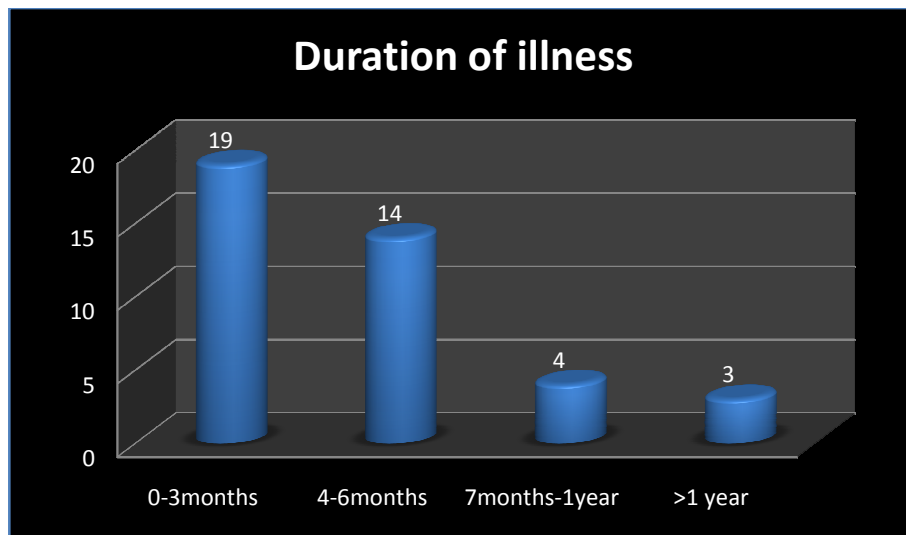


Figure 3: Family History Of Alopecia Areata

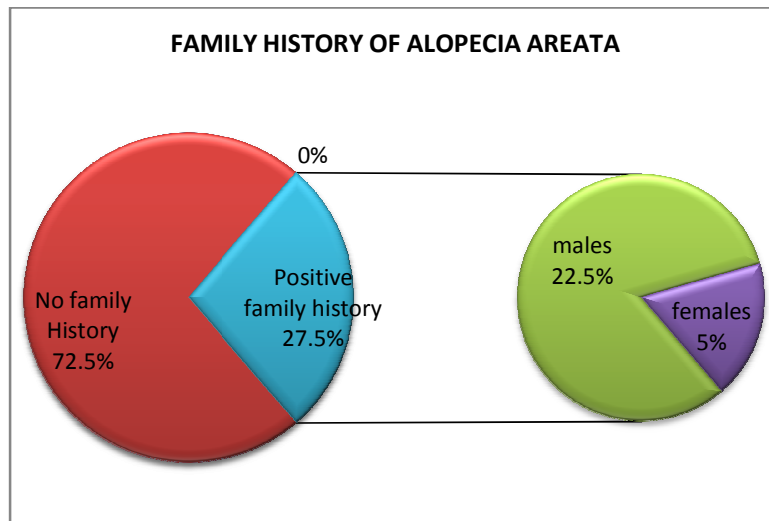


Table 2: Site of onset in Alopecia areata

Site of onset	No. of patients	Percentage
Scalp	39	97.5%
Face	1	2.5%

Figure 4: Site of onset on scalp in Alopecia areata

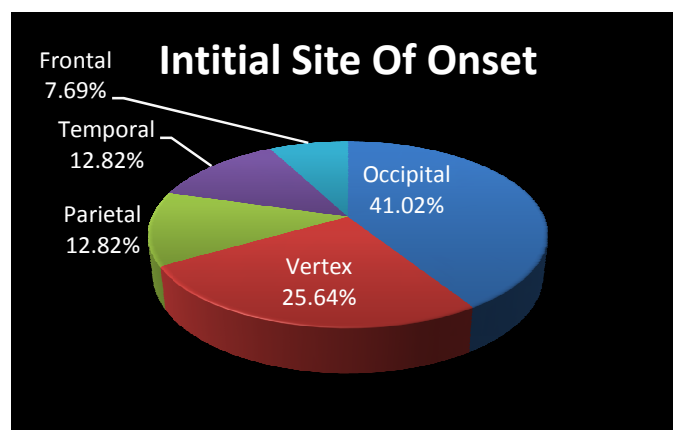


Table 3: Sites of involvement in distribution of Alopecia areata

Sites involved	No. of children	Percentage
Only scalp	28	70%
Only face	1	2.5%
Scalp and face	9	22.5%
Scalp, face, trunk	1	2.5%
Whole body	1	2.5%

Figure 5: Number of lesions in Alopecia areata

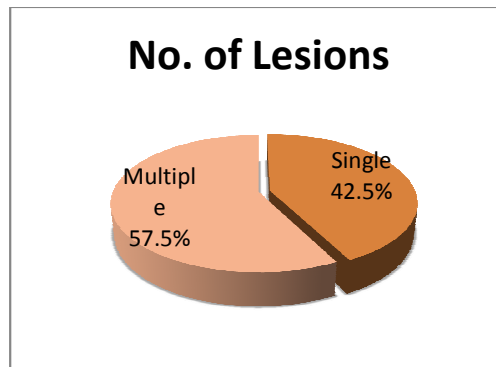


Figure 6: Site of scalp lesions in Alopecia areata

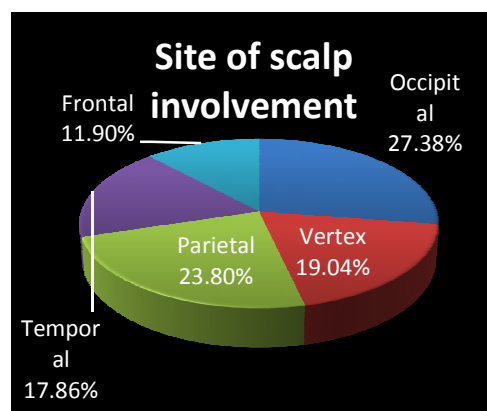


Table 4: Site of scalp lesions in various age groups in Alopecia areata

Site of scalp involvement	0-5 years	6-10 years	11-15 years
Occipital	3 (25%)	13 (28.26%)	7 (26.92%)
Vertex	2 (16.67%)	10 (21.73%)	4 (15.38%)
Parietal	4 (33.33%)	10 (21.73%)	6 (23.07%)
Temporal	3 (25%)	8 (17.39%)	4 (15.38%)
Frontal	0	5 (10.87%)	5 (19.23%)

Figure 7: Patterns of Alopecia areata

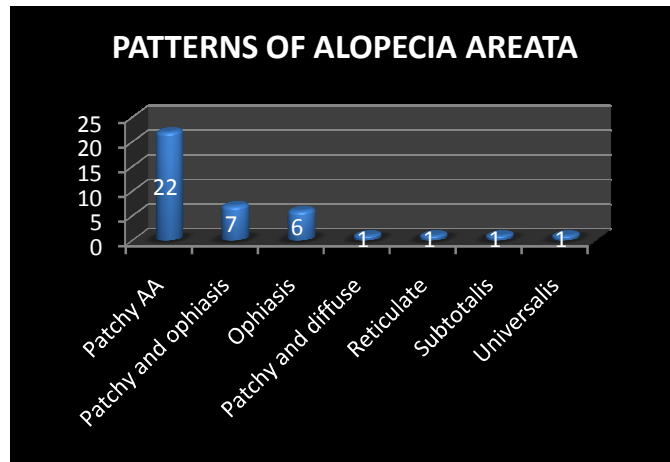


Table 4: Involvement of face in Alopecia areata

	Males	Females	Total
Eyebrows & eyelashes	6	0	6 (54.55%)
Eyelashes only	2	1	3 (27.27%)
Eyebrows only	2	0	2 (18.18%)
Total	10	1	11

Figure 8: Involvement of Nails in Alopecia areata

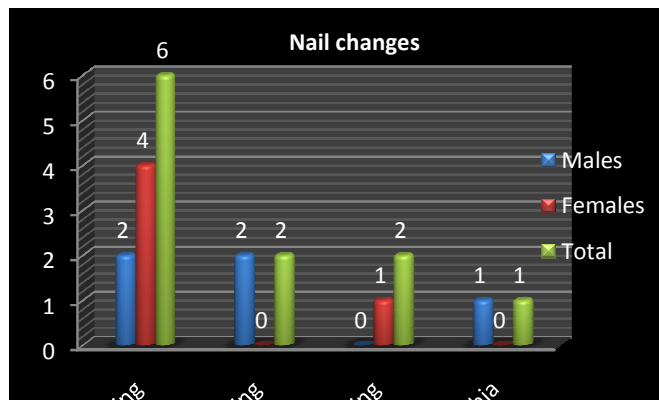


Table 5: Laboratory abnormalities seen in Alopecia areata

Abnormalities	No. of patients	Percentage
Hypothyroidism	5	12.5%
Iron deficiency Anaemia	3	7.5%

Figure 9: Exclamatory mark hair seen in Alopecia areata

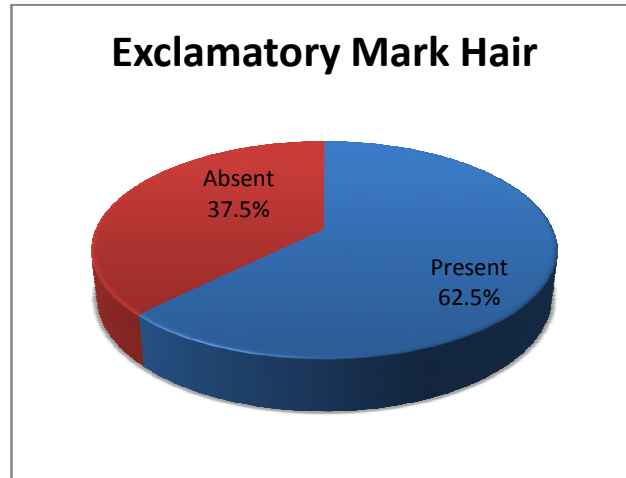


Figure 10: Severity of Alopecia areata

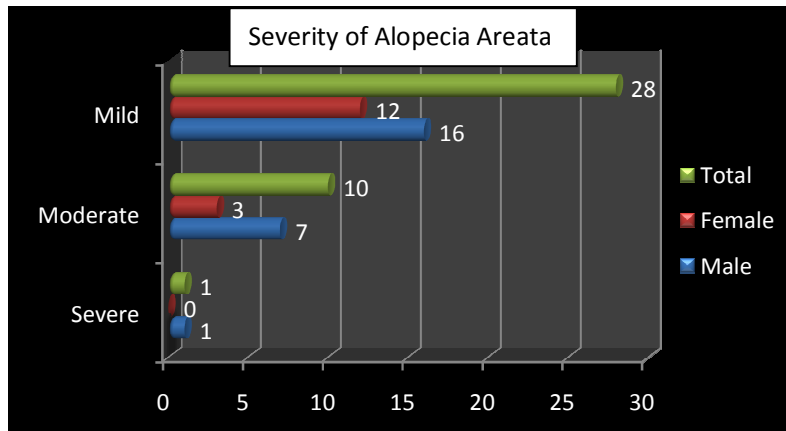


Table 6: Severity of Alopecia areata in various age groups

Severity (SALT score)	0-5 years	6-10 years	11-15 years	Total
<25	4 (14.29%)	15 (53.57%)	9 (32.14%)	28
26-75	1 (10%)	6(60%)	3(30%)	10
>75	0 (0%)	1 (100%)	0 (0%)	1

Figure 11: Severity of Alopecia areata and nail changes

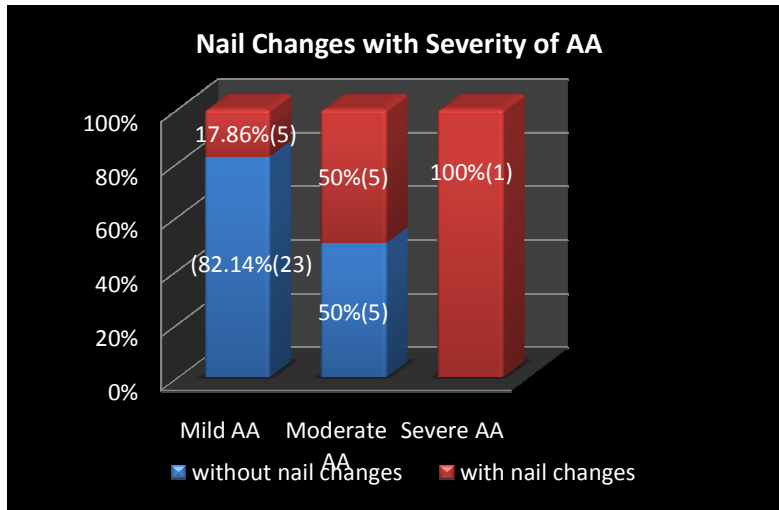


Figure 12: Severity of Alopecia areata and thyroid disorders

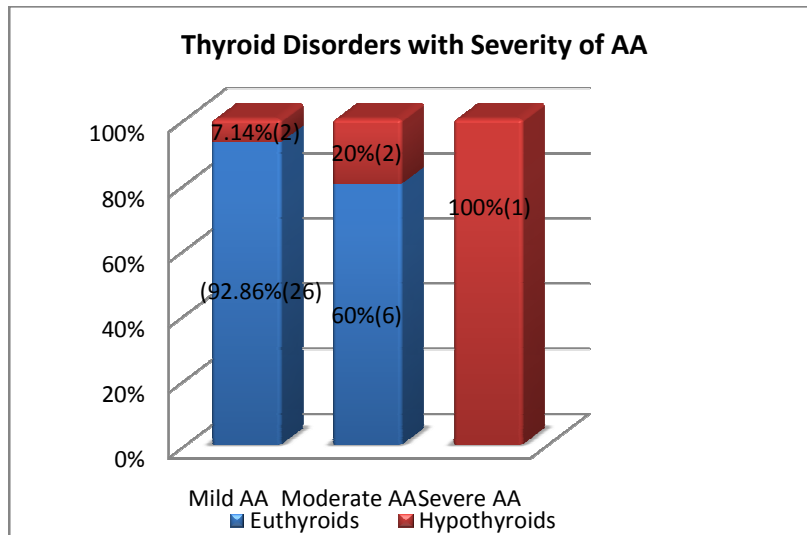


Figure 13: Severity of Alopecia areata and family history

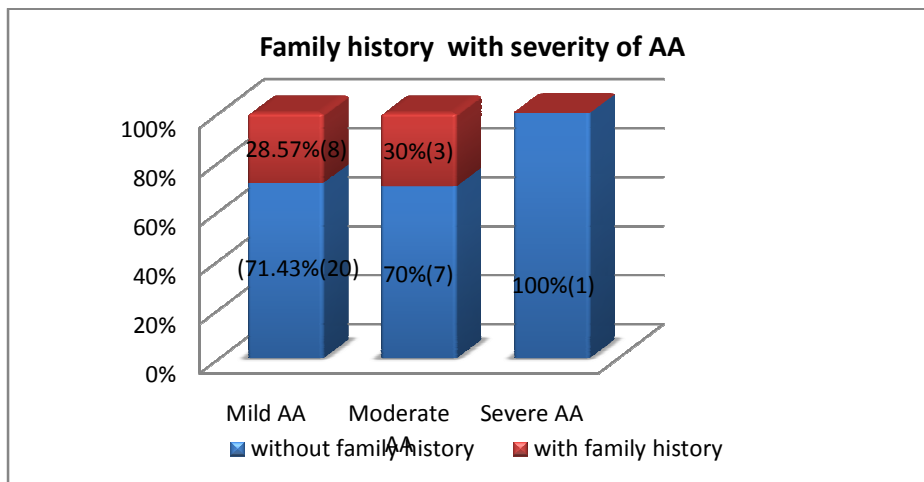


Table 7: Severity of Alopecia areata and face involvement

Severity (SALT score)	EB/EL+	EB/EL -
<25	6	22
26-75	4	6
>75	1	0

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