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ORIGINAL ARTICLE

Frequency of Alopecia Areata with other autoimmune disorders.

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ABSTRACT… Objective: To assess the frequency of alopecia areata associated with other autoimmune disorder in a tertiary care hospital. **Study Design:** Prospective Cross Sectional study. **Setting:** Department of Dermatology GHAQ/DHQ Teaching Hospital/Sahiwal Medical College, Sahiwal. **Period:** January 2020 to December 2020. **Material & Methods:** A total of 24 patients fulfilling criteria were entered in the study. After taking informed consent, demographic data was recorded. History was taken and general physical and systemic examination was performed. Laboratory investigations were carried out where needed, for determination of factors associated with alopecia areata. **Results:** This study comprised of 24 patients with male n=12 (50%) and female n=12 (50%) in equal ratio 1:1. Mean age of patients of alopecia areata with SD was 19.75 ± 9.90 years. Most of the study patients were unmarried n=17 (70.8%). More than two third of patients had mild and moderate severity of disease n=18 (75%). Most common autoimmune disorder associated with alopecia areata was Diabetes Mellitus n=6 (20.9%) followed by atopic dermatitis n=3 (12.5%), anemia n=3 (12.5%) and thyroid disorders (hypothyroidism and hyperthyroidism) n=2 (8.3%). The p value in various autoimmune diseases was found to be non-significant. (> 0.05). **Conclusion:** Patients presenting with alopecia areata may have associated other autoimmune disorders which needs to be investigated, thus helping in the management of disease.

Key words: Alopecia Areata, Autoimmune Disorders, Atopic Dermatitis, Diabetes Mellitus.

INTRODUCTION

Alopecia areata is an autoimmune hair disorder which presents with well demarcated patches of non- scarring hair loss.[1] If there is total loss of hair from scalp it is called alopecia totalis. It can also present as loss of hair from all over the body and is called alopecia universalis.

It is prevalent in all ethnicities all over the world. According to the international data available globally, lifetime incidence of alopecia areata is roughly 2%. There is no gender predilection in alopecia atreata. It may occur at any age but most commonly seen in the third and fourth decades of life.[2]

Alopecia areata is a T-cell mediated autoimmune disorder. It is suggested that stress and environmental factors triggers antigen presenting cells, thus causing disturbance in hair follicle immune privilege. Dysregulation in the central immune mechanism also plays role in the pathogenesis of alopecia areata.[3] There are four stages in hair growth cycle; anagen, catagen, telogen and exogen. Anagen stage is the period of rapid growth of hair and is targeted by alopecia areata.[4]

Various factors including genetic, environmental and autoimmunity have been postulated in the etiopathogenesis of alopecia areata. Autoimmunity is main contributor in pathogenesis of alopecia areata as reported in literature.[5,6] There is special association with thyroid autoimmunity.[7] Association of alopecia areata with other autoimmune disorders like vitiligo, lichen planus, morphea, atopic dermatitis, Hashimoto's thyroiditis, perinicious anemia and diabetes mellitus have been reported.[8] Alopecia areata is also associated with numerous systemic

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diseases and psychiatric disorders.[9]

Multiple therapeutic modalities are being used for the management of alopecia areata. Among first line treatment options, potent topical and intralesional steroids are used. Systemic immunosuppression agents like corticosteroids are the second line options. Contact immunotherapy with allergens like dinitrochlorobenzene and PUVA are included in third line options.[4]

Internationally, multiple studies have been carried out on alopecia areata and its association with other autoimmune disorders. In Pakistan few studies on this topic were conducted. The rationale for conducting this research is the paucity of clinical data among Asians and Pakistanis in alopecia areata. Moreover, we want to compare the results of our study with available international and national studies for better understanding of disease.

MATERIAL & METHODS

This prospective cross-sectional study was conducted in outpatient department of Dermatology, GHAQ/DHQ Teaching Hospital, Sahiwal from January 2020 to December 2020. It was approved by ethical committee. Convenient sampling technique was used. A total of 24 patients with clinical diagnosis of alopecia areata were enrolled in the study. Patients were categorized on the basis of severity into mild (if number of patches were three or less and diameter of each patch was less than 3 cm), moderate (if number of patches were more than three or the diameter of any patch was more than 3 cm) and severe (Alopecia totalis, alopecia universalis or ophiasias). An informed consent was taken and demographic data of the patients were recorded. General physical examination including nail changes and systemic examination was performed. Thyroid function tests, fasting blood sugar and complete blood count were done in hospital laboratory to see association with thyroid disorders, diabetes and anemia. All demographic, clinical and laboratory data of patients was recorded in predesigned proforma. Data was analyzed by using SPSS version 26. The quantitative data like age was presented as mean and standard deviation. The qualitative data like atopic dermatitis, thyroid disorders diabetes and anemia were presented in the form of frequency and percentages. P value of ≤ 0.05 was taken as statistically significant and was calculated by chi-square test. Patients with abnormalities in laboratory results were guided and referred to respective departments for further management.

RESULTS

This study consisted of 24 patients with male n=12 (50%) and female n=12 (50%) in equal proportion. Mean age of patients of alopecia areata with SD was 19.75 ± 9.9 years. Majority of the study patients were unmarried n=17 (70.8%). More than half of patients n=13 (54.2%) were found to have association with other autoimmune diseases. Most common autoimmune disorder associated with alopecia areata was diabetes mellitus n=6 (20.9%) followed by atopic dermatitis n=3 (12.5%), anemia n=3 (12.5%) and thyroid disorder (hypothyroidism and hyperthyroidism) n= 2 (8.3%). (Table-I)

Variables	Groups	Frequency	Percentage
Gender	Male	12	50%
	Female	12	50%
Marital Status	Married	7	29.2%
	Unmarried	17	70.8%
Diseases	Anemia	3	12.5%
	Atopic dermatitis	3	12.5%
	Diabetes	5	20.9%
	Thyroid disorder	2	8.3%
	No associated disease	11	45.8%

Table-I. Frequency distribution of demographic variable. n=24

Majority of study patients had mild disease n=10 (41.6%) followed by moderate disease n=8 (33.33%) and severe disease n=6 (25%). Distribution of patients according to severity of alopecia areata in various autoimmune disorders is shown in Table-II. Among the nail changes, nail pitting n=9 (37.5%) was commonly observed followed by leuconychia n=2 (8.3%) and brown

discoloration n=2 (8.3%).

		Mild	Moderate	Severe	P-Value
Atopic dermatitis	Yes	1	1	1	0.216
	No	9	7	5	
Thyroid disorder	Yes	1	1	0	0.217
	No	9	7	6	
Diabetes	Yes	1	3	1	0.132
	No	9	5	5	
Anemia	Yes	1	1	1	0.216
	No	9	7	5	
Total patients	Yes	4	6	3	
	No	6	2	3	

Table-II. Distribution patients according to severity of alopecia areata in various autoimmune disorders. (n=24)

Prevalence of associated diseases of alopecia areata with gender of patient was calculated. by chi-square test. The p value in various autoimmune diseases disease was found to be non- significant (> 0.05) as depicted in Table-III.

Disease	Groups	Male	Female	P-Value
Atopic dermatitis	Yes	2	1	0.216
	No	10	11	
Thyroid disorder	Yes	0	2	0.217
	No	12	10	
Diabetes	Yes	4	1	0.132
	No	8	11	
Anemia	Yes	1	2	0.216
	No	11	10	

Table-III. Prevalence of associated diseases of alopecia areata with gender and p-value. (n=24)

DISCUSSION

Alopecia areata (AA) is a hair disorder which presents as non-scarring hair loss. Hair loss may be diffuse or patchy.[10] The disease is autoimmune in nature and associated with various autoimmune disorders like vitiligo, lupus erythematosus, psoriasis, atopic dermatitis and autoimmune thyroid disease. Its association with other autoimmune disorders had been reported significantly in the previous studies.[11]

There is variation among the prevalence of autoimmune diseases with alopecia areata in the literature. Association with other autoimmune diseases were found to be 58.6% of patients in the studies carried out by Shahzadi et al which is close to present study results (54.1%).[12] In contrast, it was reported to be low (3.6%) in study carried out by Ejaz et al.[13]

Alopecia areata may occur at any age from childhood to late seventies.[11] Mean age of patients in the present study was 19.759 ± 90 years whereas it was reported 22.28 ± 13.00 years in study carried out by Shahzadi et al. Present study results of male and female gender in equal proportion was in concordance with previous studies data.[12] However, male dominance was observed in the national as well as international studies conducted previously.[13,14,15]

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In the current study family history was 12.5% which is comparable with similar findings (12.1%) of study results carried out by Ejaz et al.[13] However, it was 30.8% in study by Shahzadi et al.[12] Lowest frequency (6%) of family history of AA was reported in the previous studies.[14] It is postulated that multiple factors including genetic, ethnic and environmental may be involved in the familial occurrence of AA. The higher frequency of HLA-A1, HLA-B62, HLA-DQ1 and HLA-DQ3 in patients than in controls suggest an association of T cells and autoimmunity.[8]

Shahidi-Dadras et al from Iran reported that risk of developing insulin resistance is higher among AA patients due to common pathogenesis or genetic background.[16] In the current study, frequency of association of diabetes mellitus was found to be highest (20.9%) among autoimmune diseases. In contrast, Shehzadi et al and Al-mutaiari et al reported lower frequency (1.7%, 5.09%) of diabetes mellitus in their studies respectively.[12,15]

Lee et al in his study observed high prevalence rate of thyroid disorders among alopecia areata patients than in general population.[9] In the present study frequency of association of thyroid diseases was 8.3%, which was in concordance with findings (8.3%) of thyroid diseases in the

study carried out by Al-mutaiari et al.[15] Highest frequency (18.3%) of thyroid disease in alopecia areata patients was reported by Thomaset al.[17] In contrast, lowest frequency (2.4%) of thyroid diseases had been reported in the studies conducted previously.[13]

Multiple studies reported variation in frequency (1% to 52%) of atopy in AA patients.[17] Various factors including genetic and environmental in different demographic areas may be responsible for this variable frequency of atopy in AA patients. In the present study, frequency of atopic dermatitis was found to be 12.5%. However, higher frequency (29.2%) of atopic dermatitis was noticed in the previous studies.[12]

There is an increased risk of pernicious anemia in AA patients due to its autoimmune pathogenesis. However, Shahzadi et al, Al-mutaiari et al and Ertugrul et al from Turkey observed no significant associations of alopecia areata with pernicious anemia in their study subjects. [12,15,18] In contrast, association of anemia with AA was noticed in 8.3% of patients in the current study.

Vitiligo due to its autoimmune pathogenicity is considered to be associated with alopecia areata. However, present study results showed no association of vitiligo with AA. Shahzadi et al and Gill et al reported 4.2 % and 3.8% vitiligo among their study patients.[12,19]

In the current study, 9(37.5%) patients had nail pitting while both leuconychia and brown discoloration was noticed in 2(8.3%) patients each. In contrast, nail pitting was observed in 20% followed by trachonychia in 8% of AA patients in the study carried out by Chelidze et al.[20] You et al from Korea found that severity of disease and nail changes were more in male patients.[21] In our study, severity of disease and nail changes were seen equally in both genders.

The major limitation of present study was small sample size of patients because during COVID-19 pandemic less patients of alopecia areata reported in OPD of dermatology for seeking treatment and there was official closure of Dermatology OPD services in all teaching hospital of our province. Moreover, as the disease is self-limiting, so majority of patients did not show up in hospital during this pandemic.

More than half of our study subjects were found to have association with autoimmune disorders. Diabetes mellitus was the most commonly (20.8%) reported autoimmune disorder among alopecia areata patients. In future, further studies with larger sample size can elaborate the association of autoimmune disorders with alopecia areata especially in our geographical area.

CONCLUSION

Patients presenting with alopecia areata may have associated other autoimmune disorders which needs to be investigated, thus helping in the management of disease.

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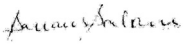
1	Sana us Salam	Collection of data, Drafting of article.	
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