A cross-sectional study of metabolic syndrome in patients with alopecia areata

Sir,

Alopecia areata is a chronic autoimmune disease of hair follicles associated with high levels of pro-inflammatory cytokines.[1] Obesity, metabolic syndrome and type 2 diabetes are considered as inflammatory disorders.[2] A higher risk of metabolic syndrome in inflammatory dermatologic disorders including psoriasis and vitiligo is well known.[3] Based on reported findings and the limited data available regarding the association of Alopecia areata with metabolic conditions, we designed a cross-sectional study allowing us to measure the prevalence of metabolic syndrome among alopecia areata patients.

A total of 50 patients who were diagnosed with alopecia areata between March and September 2018 were included in the study. The control group comprised of 50 age, sex and smoking status-matched healthy volunteers who presented with cosmetic complaints. Inclusion criteria was age >18 years and confirmed diagnosis of alopecia areata by a skilled dermatologist. The exclusion criteria were coexisting inflammatory diseases other than alopecia areata, malignancy, pregnancy and lactation. The severity of hair loss was measured according to the Severity of the Alopecia Tool (SALT) score.[4]

Table 1: Demographics and clinical characteristics of the patients with alopecia areata

Characteristics of patients	AA group (*n*=50)	Control group (*n*=50)	*p*
Gender, *n* (%)			0.28
Female	31 (62)	36 (72)	
Male	19 (38)	14 (28)	
Age in years*	37.46±11.27	38.90±9.52	0.56
Duration of alopecia in years* (minimum-maximum)	4.2±5.18 (0.5-30)	-	
SALT Score* (minimum-maximum)	50±30 (5-96)	-	
Mild AA (SALT Score <25%)	15 (30%)		
Moderate AA (SALT Score 25-49%)	6 (12%)		
Severe AA (SALT Score ≥50%)	29 (58%)		
Smoking, *n* (%)	11 (22)	10 (20)	0.8
BMI*	26.82±4.77	26.38±4	0.62
Metabolic syndrome, *n* (%)	20 (54)	13 (26)	0.004
WC (cm)*	92.64±16.45	89.56±10.71	0.1
FBS (mg/dl)*	101.66±29.92	91.98±10.98	0.16
SBP (mmHg)*	119.7±17.12	120.8±18.05	0.89
DBP (mmHg)*	76.4±10.88	79.28±13.34	0.25
Dyslipidemia, *n* (%)	29 (58)	27 (54)	0.68
TG (mg/dl)*	139.72±63.58	115.14±42.15	0.03
Cholesterol (mg/dl)*	162.48±33.44	166.32±30.08	0.37
LDL (mg/dl)*	89.70±29.68	121.06±27.48	<0.001
HDL (mg/dl)*	43.8±8.67	52.76±13.15	<0.001

*Mean±SD. AA: Alopecia areata, SALT Score: Severity of the Alopecia Tool score, BMI: Body mass index, WC: Waist circumference, FBS: Fasting blood sugar, SBP: Systolic blood pressure, DBP: Diastolic blood pressure, TG: Triglyceride, LDL: Low-density lipoprotein, HDL: High-density lipoprotein, SD: Standard deviation

How to cite this article: Nasimi M, Shakoei S, Abedini R, Ghandi N, Faghihi Z. A cross-sectional study of metabolic syndrome in patients with alopecia areata. Indian J Dermatol Venereol Leprol 2021;87:427-9.

Received: August, 2019 Accepted: May, 2020 Published: April, 2021

DOI: 10.25259/IJDVL_726_19 **PMID:** 33666049

Table 2: The severity and duration of alopecia areata regarding presence of metabolic syndrome and dyslipidemia

Characteristics	Mean±SD	
	Severity of AA	Duration of AA (years)
Metabolic syndrome		
Yes	0.62±0.24	5.51±6.02
No	0.36±0.3	2.73±3.54
p	0.001	0.058
Dyslipidemia		
Yes	0.58±0.26	3.96±3.45
No	0.39±0.3	4.61±6.98
p	0.02	0.66

AA: Alopecia areata, SD: Standard deviation

All patients were subjected to measurement of waist circumference, weight and height. Calculation of body mass index (BMI) was carried out. Recording of systolic and diastolic blood pressure was done. Blood samples were also taken for fasting blood sugar (FBS) and lipid profile including triglyceride, cholesterol, low-density lipoprotein (LDL) and high-density lipoprotein (HDL) analysis. According to the US National Cholesterol Education Programme Adult Treatment Panel III (NCEP ATP III) criteria, any patient who had three of the five following items was diagnosed as metabolic syndrome: 1) abdominal obesity (waist circumference ≥102 cm in men and ≥88 cm in women); 2) a high triglyceride level (≥150 mg/dl [1.7 mmol/L] or drug treatment for elevated triglycerides); 3) a low HDL cholesterol level (<40 mg/dl [1 mmol/L] for men and <50 mg/dl [1.3 mmol/L] for women); 4) high blood pressure (systolic ≥130 mm Hg or diastolic ≥85 mm Hg or drug treatment for elevated blood pressure); 5) a high fasting plasma glucose concentration (≥100 mg/dl [5.6 mmol/L] or drug treatment for elevated blood glucose).[5] Dyslipidemia was also defined based on the criteria provided by the NCEP ATP III as follows: total cholesterol >200 mg/dl or triglyceride >150 mg/dl or HDL cholesterol <40 mg/dl in men and <50 mg/dl in women or LDL cholesterol >130 mg/dl.[5]

For calculating the sample size, a retrospective study done by Karadag *et al*. on the association between alopecia areata and metabolic syndrome was considered. Sample size was calculated by G*power software (version 3.1.9.4), based on Wilcoxon Mann Whitney test for statistical test and assuming an effect size of d = 0.75, significant level of $\alpha = 0.05$, power of 0.95 with equal allocation ratio for two-sided test and assuming normal distribution for parent distribution. Finally, 50 samples for each group were calculated.[6]

Our results revealed that 20 (54%) of patients with alopecia areata had metabolic syndrome, which is significantly higher than 13 (26%) in controls (p = 0.004) [Table 1]. Moreover, metabolic syndrome was found for males of 2 groups (10 (52.6%) of patients versus 1 (7.1%) of controls, *P* = 0.006). The probability of having metabolic syndrome was 3.3 times higher for alopecia areata patients compared with the controls (odds ratio = 3.3, 95% confidence interval: 1.44-7.75, *P* value = 0.004). The different frequency of metabolic syndrome between two groups was mostly contributing to FBS ≥ 100 (p = 0.02), triglyceride ≥ 150 (p = 0.02) or low HDL (p = 0.02).

The data showed higher levels of triglyceride in alopecia areata group compared with the controls (p = 0.03). However, the statics showed no significant difference between the study groups regarding the presence of dyslipidemia [29 (58%) cases versus 27 (54%) controls, *P* = 0.65]. There was no significant difference in waist circumference, BMI, FBS, diastolic and systolic pressure and total serum cholesterol between the study groups (p > 0.05) [Table 1].

We also found that patients with the diagnosis of metabolic syndrome suffered from more severe alopecia areata disease versus those without metabolic dysfunction (p = 0.001). Besides, the alopecia areata patients with dyslipidemia suffered from more severe disease compared to those with normal lipid profile (p = 0.02) [Table 2]. In contrast, the duration of disease between alopecia areata patients with and without metabolic syndrome was comparable (p = 0.058) [Table 2].

The association between alopecia areata and metabolic syndrome has only been noted in a study done by Karadag *et al*.[6] Recently, Huang *et al*. suggested the possible metabolic comorbidities, including a high prevalence of lipid dysregulation (24.5%) in alopecia areata patients.[7] We found that 29 (58%) of alopecia areata patients had dyslipidemia, which was comparable to the controls [27 (54%), *P* = 0.68]. Similar to our report, Karadag *et al*.[6] and Incel-Uysal *et al*.[8] did not find any significant change in the lipid profile of alopecia areata patients.

Hypertension is determined as another common comorbidity of alopecia areata with a prevalence of 21.9%.[7] Despite the reports of Karadag *et al*., we did not find any significant difference in systolic and diastolic blood pressure between alopecia areata and control groups.[6] Consistent with previous reports, we did not notice any rise in FBS, BMI or waist circumstance in alopecia areata patients compared to healthy individuals.[6,8] The conflicting results regarding the different components of the metabolic syndrome could be due to ethnic differences among study populations, divergence in sampling, inclusion and exclusion criteria, different statistical methods and defined confounding factors.

The small sample size is one of the limitations of this study. In addition, we could not measure the variables of insulin resistance. Consideration of diet, exercise level and drug use as confounding factors influencing the metabolic profile could definitely increase the authenticity of our study.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship
This study was supported financially by the Tehran University of Medical Sciences, Tehran, Iran.

Conflicts of interest
There are no conflicts of interest.

Maryam Nasimi, Safoura Shakoei[1], Robabeh Abedini, Narges Ghandi, Zahra Faghihi

Department of dermatology, Razi Hospital, Tehran University of Medical Sciences, [1]Department of Dermatology, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran

Corresponding author:
Dr. Safoura Shakoei,
Department of Dermatology, Imam Khomeini Hospital, Tehran University of Medical Sciences, PC: 1419733141, Tehran, Iran.
dr.shakoei@gmail.com

References

1. Alkhalifah A, Alsantali A, Wang E, McElwee KJ, Shapiro J. Alopecia areata update: Part I. Clinical picture, histopathology and pathogenesis. J Am Acad Dermatol 2010;62:177-90.
2. Hotamisligil GS. Inflammation and metabolic disorders. Nature 2006;444:860.
3. Ünlü B, Türsen Ü. Autoimmune skin diseases and the metabolic syndrome. Clin Dermatol 2018;36:67-71.
4. Olsen E, Hordinsky M, McDonald-Hull S, Price V, Roberts J, Shapiro J, *et al*. Alopecia areata investigational assessment guidelines. National Alopecia Areata Foundation. J Am Acad Dermatol 1999;40:242-6.
5. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA 2001;285:2486-97.
6. Karadag AS, Ertugrul DT, Bilgili SG, Takci Z, Tutal E, Yilmaz H. Insulin resistance is increased in alopecia areata patients. Cutan Ocul Toxicol 2013;32:102-6.
7. Huang KP, Mullangi S, Guo Y, Qureshi AA. Autoimmune, atopic, and mental health comorbid conditions associated with alopecia areata in the United States. JAMA Dermatol 2013;149:789-94.
8. Incel-Uysal P, Akdogan N, Alli N, Oktem A, Candar T, Topcuoglu C, *et al*. Assessment of metabolic profile and ischemia-modified albumin level in patients with alopecia areata: A case-control study. Indian J Dermatol 2019;64:12-8.

Knowledge, attitude and practice regarding topical steroids in dermatology outpatients: A cross-sectional study from a tertiary care hospital in Raipur, Chhattisgarh

Sir,
Various studies have shown that topical corticosteroids are frequently misused by patients due to lack of information and self-abuse. This study has been conducted to assess the knowledge, attitude and practice regarding topical corticosteroids in dermatology outpatients.

A prospective, cross-sectional study was conducted to assess the knowledge, attitude and practice involving steroid usage in 350 adult patients presenting to the dermatology outpatient department at All India Institute of Medical Sciences, Raipur, Chhattisgarh from December 2018 to May 2019. The patients included in our study either named the topical corticosteroids directly or the investigator confirmed by seeing the prescription/used tube or by showing a photographic folder containing various topical steroids or steroid combination creams which were commonly available in our area.

A questionnaire concerning demographics, knowledge, attitude and practice of topical steroids was developed by the authors of this study. Student's *t*-test and Chi-Square test were used for statistical evaluation. The significance level was taken as P value < 0.05.

The ratio of male and female patients was 1.3:1. The age of the patients ranged from 18 to 78 years (mean: 41.5 years). The demographic details of the patients are mentioned in Table 1. The most common indication of topical corticosteroids in our

How to cite this article: Chhabra N, Sachdev D, Shukla AK. Knowledge, attitude and practice regarding topical steroids in dermatology outpatients: A cross-sectional study from a tertiary care hospital in Raipur, Chhattisgarh. Indian J Dermatol Venereol Leprol 2021;87:429-32.

Received: July, 2019 Accepted: June, 2020 Published: April, 2021

DOI: 10.25259/IJDVL_582_19 **PMID:** 33666060