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Original research article

A tertiary health center's prevalence of non-alcoholic fatty liver disease and metabolic syndrome in psoriasis

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Abstract

Background and objectives: The goal of this research was to examine the incidence of psoriatic fatty liver disease in the south Indian population. Research into the incidence of metabolic syndrome in people with psoriasis in south India. Determine if there is a relationship between psoriasis severity and the incidence of NAFLD. The goal of this study is to determine whether or not age, severity and type of psoriasis are associated with non-alcoholic fatty liver disease and metabolic syndrome.

Method: Our study, which included 180 people with psoriasis, is a cross-sectional analysis of the condition conducted at Department of pulmonary medicine, Sri Sathya Sai Medical College and Hospital, Tamil Nadu, India from August 2021 to July 2022. Patients with psoriasis who are using hepatotoxic medicines or who are heavy drinkers will not be included in the trial. All patients undergo a battery of diagnostics, including ultrasonography, after a thorough clinical history and physical examination.

Result: In our study, 52.3% of participants with psoriasis also had NAFLD and 18.5% of participants also had metabolic syndrome. Our results also show an increase in the other features of metabolic syndrome. Psoriasis severity is unrelated to non-alcoholic fatty liver disease. Significant dyslipidemia was seen in psoriasis patients with metabolic syndrome.

Conclusion: There is a strong correlation between psoriasis, metabolic syndrome and non-alcoholic fatty liver disease (NAFLD). Psoriasis has been shown to have an independent association with NAFLD.

Keywords: Psoriasis, non-alcoholic fatty liver disease, dyslipidemia, metabolic syndrome

Introduction

Psoriasis vulgaris, or just psoriasis, is a skin disorder that affects 1.5-3% of the global population. The environmental conditions play a role, with countries at greater latitudes from the equator having a higher prevalence, as shown by a study in India citing a prevalence of 0.8% to 5.6% [1, 2, 3].

It is now understood that psoriasis affects more than simply the skin, and that people who have it frequently experience other health problems as a result. Researchers from all around the world have found that people with psoriasis are more likely to have a variety of complications that can affect any part of the body. It's well knowledge that people with psoriasis are more likely to develop heart disease and die at a young age.

The growing prevalence of metabolic syndrome is one such comorbidity that has recently attracted attention. The following are some of the comorbidities related with psoriasis that the treating physician or dermatologist should keep in mind while treating a patient. In order to raise psoriasis sufferers' consciousness regarding co-occurring conditions [3, 4].

Psoriasis patients have a higher than average prevalence of non-communicable diseases, thus it's important to teach them how to protect themselves from getting sick in the first place. In order to diagnose complications and begin therapy as soon as possible, doctors should be familiar with the guidelines for monitoring patients with psoriasis. In order to prevent adverse drug reactions, doctors treating systemic illnesses should be familiar with the many psoriasis therapy options available. The purpose of this research is to determine the prevalence of metabolic syndrome in people with psoriasis in our area [5, 6].

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Material and Methods

The participants underwent cross sectional study at Department of pulmonary medicine, Sri Sathya Sai Medical College and Hospital, Tamil Nadu, India from August 2021 to July 2022 comprised 180 patients. Psoriasis and its complications were described to all participants. All patients were given information in their native language about the study's procedures and the benefits of taking part in the study. All participants provided informed consent before taking part in the study. Subjects were evaluated with respect to their clinical history, general physical examination, clinical examination, dermatological examination, blood investigation, and ultrasonography by a radiologist.

Inclusion criteria

1. Participants were to be adults with a psoriasis diagnosis and older than 20 years old.

Exclusion criteria

1. Methotrexate, corticosteroids, psoralens, acitretin, oral contraceptive pills, tamoxifen, and antituberculosis medications are all considered hepatotoxic and should be avoided by those with psoriasis.
2. Patients who have excessive alcohol consumption Alcohol intake in excess of 40 gm. Two drinks per day for women and three for men, according to the normal drinking guidelines.
3. People who have been asked to participate in the study but are declining.
4. Hemochromatosis (H/S/O), Wilson's disease (Wilson's),

Result

In total, 180 patients took part in our analysis. There are a total of 180 people, 105 (58.33% male) and 75 (41.66% female). There is a wide range of ages represented, from 20 to 72. The PASI score is used to divide all subjects into distinct groups for statistical analysis. The PASI scores of our patients ranged from 5 to 60. Men between the ages of 30 and 50 make up the bulk of the participants. The vast bulk of them fell between the PASI range of 11-30.

Table 1: Psoriasis Patients and Body Mass Index

PASI	No. of Patients			Total
	<22.9	23-27.49	>27.5	
0-10	27(38.02%)	23(33.33%)	17(42.5%)	67(37%)
11-30	25(35.21%)	27(39.13%)	18(45%)	70(38.8%)
31-50	11(15.49%)	9(13.04%)	3(7.5%)	23(12.7%)
51-72	8(11.26%)	10(14.49%)	2(5%)	20(11.11%)
Total	71(39.44%)	69(38.33%)	40(22.22%)	180

Of the 180 patients, 51 (26.33%) had hypertension; 17 were newly diagnosed and the rest were already receiving treatment. Only six of these people are under forty years old; the rest are all over that age. Out of 180 people, 65 (36.11%) had high blood sugar. Eleven are brand new discoveries. The rest of the patients are medicated. Many patients have significantly abnormal lipid profiles in the morning after fasting. Seventy-two patients, or 40%, have high triglycerides, while 38 patients, or 21.1%, have high cholesterol. However, 77 patients (42.77%) have low HDL levels.

Approximately 81 (45%) are diagnosed with NAFLD via ultrasound. NAFLD is projected to have a prevalence of 45.5%. Nineteen of these people had metabolic syndrome. The 11-30 PASI range is where you'll most often see them. There was a uniform distribution across age groups and sickness severity.

Thirty-two people in our study are diagnosed with metabolic syndrome. The majority are middle-aged men (PASI 11-30) who are all over the age of 40. Eighteen of these patients have been unwell for more than three years and their PASI score ranges from 11-30.

Table 2: Age and Sex Distribution of Metabolic Syndrome

	Age		Sex	
	<40	>40	Male	Female
No. of Patients MS	10 (5.5%)	23 (12.77%)	18 (10%)	15 (8.33%)
Total	33 (18.3%)		33 (18.3%)	

Discussion

Psoriasis is a systemic disease, meaning it affects multiple organs and tissues across the body. It is a state of persistent inflammation caused by T helper cells and the cytokines they produce. Adipokines have gained attention as a potential treatment for psoriasis. Its importance in psoriasis has been confirmed by a number of experiments. Psoriasis patients are at an increased risk for developing coronary artery disease because of the prevalence of the comorbidity known as metabolic syndrome. In recent years, NAFLD has come to be recognised as the metabolic syndrome's hepatic manifestation [7, 8, 9]. Therefore, the purpose

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of this research is to determine the prevalence of NAFLD and metabolic syndrome in people with psoriasis. NAFLD is predicted to affect 20-30% of the general population in a variety of countries. It is estimated that 9-19% of the adult population in India has NAFLD. Seventy-five (45.5%) of our patients have NAFLD. Our results show an increased prevalence of NAFLD, which is consistent with those of other research. The prevalence of NAFLD in psoriasis was found to be 46.2% in a study conducted by Van der voort *et al*. The prevalence rate among people with psoriasis is 59.2%, according to research by Miele *et al*. NAFLD has been discovered to be prevalent in 47% of psoriasis patients, according to research by Gisondi *et al*. In the south Indian population, Madanagobalane *et al*. found a prevalence of 17.4 percent [10, 11, 12].

The prevalence of NAFLD in our study was similar across age groups, sexes, and disease durations. This finding is consistent with that of a study by Gisondi *et al*., which found that the prevalence of NAFLD did not differ by age, gender, BMI or length of psoriasis. We did not detect any link between NAFLD and any form of psoriasis, in contrast to research by Gisondi *et al*., who identified a higher frequency of NAFLD in chronic plaque psoriasis, and Madanagobalane *et al*., who found an association of NAFLD with psoriatic arthritis. Similar to the Gisondi *et al*. study, which similarly found a connection between NAFLD and psoriasis severity and higher PASI score, our investigation found that patients with NAFLD were more prevalent in the PASI group 11-30 years. We showed that nonalcoholic fatty liver disease (NAFLD) in psoriasis patients was linked to obesity, dyslipidemia, and metabolic syndrome [13, 14]. These results are consistent with those found in other investigations. Psoriasis and nonalcoholic fatty liver disease (NAFLD) share a similar aetiology, which likely explains this connection. Psoriasis and NAFLD are two diseases where adipocytokines play a role. Psoriasis is linked to low levels of the hormone adiponectin. Researchers Takahashi *et al*. discovered a link between low adiponectin levels and the severity of psoriasis. After treatment for psoriasis, serum adiponectin levels rise, as demonstrated by Shibata *et al*. In our sample, 27 participants (16%) had metabolic syndrome. Our research also shows a rise in the other variables [14].

Our research shows that men over the age of 40 are disproportionately affected by metabolic syndrome. In addition, those over the age of 40 are disproportionately affected by metabolic syndrome components such as hypertension, central obesity, and diabetes. This finding was also confirmed by the research of Gisondi *et al*. and Madanagobalane *et al*. The prevalence of metabolic syndrome was found to be 44.1% in a study conducted by Madanagobalane *et al*. Prevalence estimates of 30.8% and 30.1% are cited by other studies like Safiye kutlu *et al*. and Gisondi *et al*. [15, 16]. Central obesity is more common among our psoriatic patients (39%) and dyslipidemia (poor HDL; 39%; triglycerides; 36%) is more common than in the general population (21%). There was no difference in high-density lipoprotein (HDL) values, but the prevalence of triglyceridemia was higher (33.9%), as did abdominal obesity (34.7%), as was seen in other studies (e.g., Madanagobalane *et al*.). There was no statistically significant difference in the prevalence of low HDL between the two groups studied by Gisondi *et al*. and Nazhatun nisa *et al*. [17, 18]. Researchers in Iran, the United Kingdom, and Hyderabad also discovered substantial dyslipidemia in psoriasis. Our research showed that the frequency of metabolic syndrome increased with both disease duration and hyperglycemia. Metabolic syndrome was not linked to more severe cases of psoriasis, hypertension, or diabetes. Madanagobalane *et al*. found no association between psoriasis severity, duration, hypertension, or HDL levels. Neimann AL found that people with severe psoriasis were more likely to have diabetes. Similar to previous research, we found that nearly all of our patients with metabolic syndrome also had NAFLD [19, 20].

Conclusion

NAFLD and metabolic syndrome are strongly linked to psoriasis. Psoriasis is independently related with NAFLD, as evidenced by the increased prevalence of NAFLD. Before giving any hepatotoxic drug to a psoriasis patient, doctors should think about the possibility of chronic hepatic involvement in the disease. Psoriasis is now recognised as a multi-system, chronic inflammatory illness, not merely a skin condition. Non-alcoholic fatty liver screening is recommended prior to the administration of any hepatotoxic medicine, and treatment planning should take into account numerous cardiac metabolic comorbidities. In addition to psoriasis treatments, people with metabolic syndrome should be counselled on how to make positive lifestyle changes and given cardioprotective pharmaceuticals. Diabetes, atherosclerosis and liver disease are all risk factors for psoriatic individuals and should be monitored periodically.

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