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ORIGINAL RESEARCH

Risk of Myocardial Infarction in Patients with Psoriasis-A Prospective, Population Based Cohort Study in a Tertiary Health Care Center

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Abstract

Background

About 2% to 3% of adults in the United States suffer from the chronic immune-mediated illness psoriasis. A related inflammatory arthropathy affects 6 to 11 percent of psoriasis patients, according to studies. Psoriasis can affect different amounts of body surface area, ranging from a minimal disease (2% body surface area) in around 80% of patients to more widespread skin involvement in about 20% of patients. Even in patients with only a little amount of affected body surface area, psoriasis has a significant negative influence on health-related quality of life. The aim of the study is to ascertain whether psoriasis is an independent risk factor for MI in a population-based cohort after accounting for the main cardiovascular risk variables.

Methods

Comparing results between patients with and without a psoriasis diagnosis in a prospective, population-based cohort study of patients with psoriasis aged 20 to 90 years. With a mean follow-up of 5.4 years, data were gathered by general practitioners as part of the patient's medical file. Age, sex, smoking, diabetes, myocardial infarction history, hyperlipidemia, hypertension, and body mass index were taken into account. Psoriasis patients were classified as moderate or severe according to PASI scoring.There were 100 individuals in total, both with mild and severe psoriasis.

Results

We identified 100 patients with psoriasis followed up for a mean of 5.4 years (Table 1). Patients with psoriasis were less likely to be censored by transferring out of the practice. Among patients with psoriasis, 6% were classified as having severe disease based on having received systemic treatment. MI incidence rates.People with psoriasis had a greater incidence of MI, with the highest prevalence occurring in people with severe psoriasis.

Conclusions

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Psoriasis may confer an independent risk of MI. The RR was greatest in young patients with severe psoriasis.

Keywords: Myocardial Infarction, Psoriasis, Risk

Introduction

About 2% to 3% of adults in the United States suffer from the chronic immune-mediated illness psoriasis[1,2]. A related inflammatory arthropathy affects 6 to 11 percent of psoriasis patients, according to studies [3,4]. Psoriasis can affect different amounts of body surface area, ranging from a minimal disease (2% body surface area) in around 80% of patients to more widespread skin involvement in about 20% of patients[5]. Even in patients with only a little amount of affected body surface area, psoriasis has a significant negative influence on health-related quality of life [6].

Thick, scaly red plaques and, in some people, arthritis are the results of the pathophysiology of psoriasis, which is characterized by an increase in antigen presentation, T-cell activation, and T-helper cell type 1 (TH1) cytokines[7,8]. Indicators of systemic inflammation, such as elevated C-reactive protein levels, are also linked to psoriasis[9-11]. The immunological abnormalities that cause psoriasis raise the possibility that these people have a higher chance of developing other inflammatory-related disorders. Activated T cells, antigen-presenting cells, cytokines, and indicators of systemic inflammation like C-reactive protein, for instance, are thought to have a role in the development of atherosclerosis and ultimately myocardial infarction, according to mounting data (MI)[12,13]. The finding that additional TH1-mediated illnesses, such rheumatoid arthritis, are linked to a higher incidence of MI lends credence to the idea that TH1-mediated illnesses put their sufferers at risk for MI[14-16].

Psoriasis is linked to a higher prevalence of cardiovascular disorders, including MI, according to several hospital-based studies[17–19]. It is unclear if psoriasis itself, or comorbidities and behaviors linked with psoriasis, explain this association because these studies did not adjust for any possibly associated risk factors for MI. In order to assess the risk of MI in psoriasis patients, we looked at a population-based cohort that was generally typical of the general population.

Materials and Methods

The present study was a prospective population based cohort study conducted in MKCG Medical College and Hospital, a tertiary care hospital in southern Odisha, study period was from April 2014 to September 2019. All psoriasis patients between the ages of 20 and 90 who had at least one day of observation time made up the study population. The latest date between the patient registration, up to standard, and psoriasis diagnosis dates was the observation start time for patients with psoriasis. Follow-up for all patients ended when the patient experienced a MI, passed away, was transferred out of the practice, or the practice ceased to meet standards, whichever occurred first.

If a patient ever had a diagnosis of psoriasis, they were considered to have the condition. Severity of the condition was determined by the Psoriasis Area Severity Index (PASI). The coloring, thickness, scaling, and coverage of these plaques are all measured using the PASI score. The range of absolute PASI scores is 0-72. with higher scores indicating a greater severity of psoriasis. A score of 0 indicates no psoriasis, while a score higher than 10 suggests severe psoriasis. The psoriasis patients' history of MI was not taken into account when choosing the treatment. If psoriasis sufferers never experienced severe disease, they were considered to have mild disease.

If patients had any conditions when the practice was deemed to be up to par, they were labeled as having diabetes mellitus, hyperlipidemia, hypertension, or being a current smoker. If a patient experienced a MI on or before their start date, it was established that they had a history of MI. Age was calculated using the patient registration's upper limit and up to the usual dates. Body mass index was recorded the closest to the commencement date.

Data were descriptively summarized. The Fisher exact test for categorical variables and the t test for continuous variables were both used to examine associations between the presence of psoriasis and other factors.

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Results

We identified 100 patients with psoriasis followed up for a mean of 5.4 years. Patients with psoriasis were less likely to be censored by transferring out of the practice. Among patients with psoriasis, 6% were classified as having severe disease based on having received systemic treatment(table 1).

Table 1: Characteristics of study subjects

Variables	Mild Psoriasis (n=94)	Severe Psoriasis (n=6)	P value
Sex Male Female	 44 50	 2 4	0.01
Age (y) Mean	 46.35	 49.75	<0.001
Diabetes Mellitus Yes No	 4 90	 4 2	0.001
History of MI Yes No	 2 92	 1 5	0.002
Hyperlipidemia Yes No	 4 90	 1 5	<0.001
Hypertension Yes No	 15 79	 4 2	<0.001
Smoking Yes No	 24 70	 2 4	<0.001
Mean BMI Kg/m^2	25.77	26.55	<0.001

Table 2 displays the MI incidence rates.People with psoriasis had a greater incidence of MI, with the highest prevalence occurring in people with severe psoriasis.

Table 2: Incidence of MI in Patients With Psoriasis

Variables	Mild Psoriasis (n=94)	Severe Psoriasis (n=6)
No. of new MI cases	2	3
Incidence per 1000 person-years (95% CI)	4	6

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Discussion

The findings of our study indicate that psoriasis is a separate risk factor for MI. Psoriasis increases the risk of MI, which is highest in young individuals with severe psoriasis, diminishes with age, and persists even after adjusting for conventional cardiovascular risk factors. Given that patients with severe psoriasis had a larger risk of MI than those with mild psoriasis, the results show a dose-response relationship, which is in line with the theory that more immunological activity in psoriasis is associated with a higher risk of MI. The fact that psoriasis is a diverse illness may be the cause of the younger psoriasis patients' increased risk ratio of MI. Additionally, there may be a survivorship effect, whereby after decades of psoriasis, those patients predisposed to MI would be less likely to be available in the older age groups of our study due to the mortality associated with MI, given that the majority of patients with psoriasis develop the disease before age 40 years.

Our work adds to the body of research proving the link between psoriasis and MI since it was population-based, broadly representative, and it took into account key risk factors that are normally evaluated in epidemiological studies of cardiovascular disease. The study serves as a general representation of psoriasis patients. In individuals under 50, the magnitude of link between severe psoriasis and MI is comparable to the amount of association.

When the main MI risk variables were taken into account, the results were consistent. However, it's likely that unidentified or unmeasured confounding factors could account for some of the connection that was found. For instance, when analyzing individuals from referral centers or hospitals, recent literature has discovered small links between obesity, smoking, stress, and psoriasis. [20,21] About 61% of patients had information on their body mass index available, and psoriasis patients had higher BMIs than control patients did. A substantial correlation between psoriasis and body mass index has not been discovered in other population-based studies[22]. In our analysis, we looked at the patients who had their body mass index reported, and we found no evidence of confounding by BMI.

The impact of psoriasis severity and systemic therapy on the risk of MI cannot be distinguished since we classified severe psoriasis based on a history of having undergone systemic therapies. It is likely that our criteria for identifying severe psoriasis may underestimate the independent risk of MI in individuals with severe psoriasis because methotrexate was the most frequently used systemic medication and has recently been proven to reduce the incidence of cardiovascular events[23].

Conclusion

Since our discoveries are novel, it's critical to conduct further research to verify them and ascertain how they might be used therapeutically. Determine the effect of systemic inflammation biomarkers (such as C-reactive protein) and clinical indicators of psoriasis activity, such as body surface area, on the risk of MI in psoriasis patients. Patients with psoriasis should be strongly encouraged to aggressively address their modifiable cardiovascular risk factors in the interim as part of proper medical care.

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