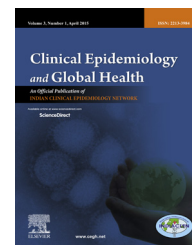


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Original Article

Association between psoriasis, diabetes mellitus, hypertension and obesity



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ABSTRACT

Problem statement: Psoriasis affects up to three percent of the global population. The study was conducted to find the association of hyperglycaemia, hypertension and obesity with psoriasis.

Methods: In this collaborative study conducted at a tertiary care teaching hospital in eastern India, 40 persons suffering from psoriasis, diagnosed at the Dermatology Outpatients, were compared with 40 analogous non-psoriatic patients recruited from Medicine Outpatients.

Results: Among the psoriasis participants 27.50 percent of cases and 12.50 percent of controls had higher fasting blood glucose level [$\chi^2 = 2.813$, P value = 0.0935] with overall male predominance. Significantly higher number of cases (35%) had post-prandial blood glucose value (>140 mg/dl) than controls (15.00%) [$\chi^2 = 4.267$, P value = 0.038]. Similarly, significantly higher number of cases (35.00%) had glycated haemoglobin value more than control group (15.00%) [$\chi^2 = 4.267$, P value = 0.0388]. Systolic blood pressure was higher in psoriatic groups (25.00%) compared to controls (20.00%) [$\chi^2 = 0.287$, P value = 0.592]; diastolic blood pressure was also higher in cases (27.50%) than in control (22.50%) [$\chi^2 = 0.267$, P value = 0.606]. Body Mass Index was higher in 32.50 percent in cases and 52.50 percent in control groups. Waist circumference was more than 90 for 42.85 percent male and >80 for 36.84 percent female psoriatic patients and in controls it was 12.50 percent and 31.25 percent male and female respectively.

Conclusion: In our study it was observed that psoriatic patients had higher concentrations of fasting glucose, post-prandial glucose, glycated haemoglobin percentage and higher waist circumference.

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1. Introduction

Psoriasis is a chronic multifactorial immune mediated inflammatory disorder of skin affecting one to three percent of the global population and there were associated obesity, cardiovascular disease, diabetes mellitus and metabolic syndrome.^{1–3} In several epidemiological studies obesity had been associated with severe psoriasis and was reported about twice as frequently among psoriasis patients as in the general population.^{4–5} The role of the adipocytes for development of insulin resistance associated with dyslipidemia, hypertension, and premature heart disease is well known. Obesity is considered as one of the major risk factors for the development of psoriasis and improvement was observed after reduction of weight.⁶ Other research groups concluded that psoriatic patients had associated higher prevalence of cardiovascular risk factors of diabetes⁷ and hypertension.⁸ Several studies showed that patients with psoriasis carried an increased risk of developing comorbidities related to the metabolic syndrome⁹ that included arterial hypertension, obesity and abnormalities in lipid and glucose metabolism.

The study was conducted with the objectives to the study to find association of fasting and post-prandial blood glucose and glycated haemoglobin levels, hypertension and obesity with psoriatic population compared to the non-psoriatics.

2. Methods

This hospital based case control study was conducted in the department of Dermatology and Medicine, and Biochemistry in M.G.M. Medical College & Lions Seva Kendra Hospital, Kishanganj, Bihar during one year. Necessary clearance was obtained from Institutional Ethical Committee.

2.1. Study approach

All the consecutive psoriatic patients attending the Dermatology Outpatients department during the days of data collection, according to case definition, constituted the sample size. Thus, 40 psoriasis patients from Dermatology and 40 non-psoriatic patients were recruited from Medicine Outpatients department to make the total sample of 80. The study was conducted in two working days per week during the whole study period.

2.2. Data collection tool

A predesigned, pretested, semi-structured questionnaire (in local vernacular) was used to collect the data relating to the psoriasis. The data collection tool was developed at the Institute with the assistance from the faculty members, statistician and experts in the field.

The pilot study was carried out at the out patients department among comparable participants after pre-testing some of the questions from the interview schedule and modified in the questionnaire to make it custom-made for the study.

2.2.1. Case definition

Psoriasis was defined as a chronic immune mediated inflammatory disease with the erythematous papules forming plaques and loose micaceous scaling.¹⁰

2.2.2. Inclusion criteria

All the participants presenting with the morphological variants of psoriasis with or without joint involvement, whether pre-treated or untreated, were included in the study.

2.2.3. Exclusion criteria

The drug-induced psoriasiform lesions, psoriatic arthropathy without skin involvement, nail psoriasis without skin involvement, generalized pustular psoriasis without any history of psoriatic plaque, sebo-psoriasis and in cases of non-consent.

2.3. Data collection technique

Direct interview of the eligible study participants were carried out by the principal investigator and the treatment sheets were reviewed. All the participants were explained about the purpose of the study after duly explaining the procedures in their local languages along with the scope of future intervention, if necessary. They were assured that the information collected would be kept confidential and would be used only for academic purpose and not for their interventions. They were ensured strict confidentiality, and then informed consent was obtained from each of the participants before the total procedure. The participants were given the options not to participate in the study, if they wanted. Then only the detailed demographic records were recorded.

2.4. Anthropometric measurements

Weight of the study participants were measured in standing posture. A calibrated and standardized mechanical weighing scale was used to measure weight with a precision of 0.1 kg. Height was measured by a World Health Organization approved wall-mounted height measuring scale with a precision of 0.1 cm.

According to these two measurements, measurement of obesity was assessed by calculating the BMI, waist circumference. Body mass index (BMI) was calculated as weight (in kg)/height² (in meters). According to Indian guidelines, BMI from 23 to 24.9 as overweight, BMI greater than or equal to 25 as obese was considered in this study as operational definitions.¹¹ The waist circumference was measured by placing the measuring tape snugly around the abdomen at the level of the iliac crest. A waist circumference of more than 90 cm for men and 80 cm for women was considered to be abdominal obesity.¹¹

Blood pressure was measured by mercury sphygmomanometer in sitting posture. Systolic blood pressure of 140 or more and diastolic blood pressure of more than 90 mm of Hg was considered in this study as operational definitions for hypertension.¹²

2.5. Biochemical parameters

Blood samples were collected in Fluoride containing vials for fasting and post-prandial (PP) plasma glucose estimation, EDTA vials were used for glycated haemoglobin estimation.

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