

To Find the Correlation of Immunoglobulin G with Severity of Psoriasis

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ABSTRACT

Objectives: To find the correlation of immunoglobulin G with severity of psoriasis.

Methodology: This cross-sectional descriptive study was conducted at Sir Ganga Ram Hospital Lahore/Niazi Teaching Hospital Sargodha. Study duration was six months from January 2020 to June 2020. One hundred patients of psoriasis (confirmed by Dermatologist) were included in the study. Questionnaire based on age, gender, duration of illness, type and severity of problem etc and biochemical test including immunoglobulin G were filled by consented patients. The study comprised into patients and controls groups. Fifty age matched Subjects with no history of skin disease were taken as controls. For immunological assessment, IgG was measured by the technique of ELISA

Results: Mean age of developing of disease was in the range of 36 to 43 years. A few patients have family history with a problem of asthma. High severity of index (59 to 61) in both genders with duration of disease was 4 to 6 years. A direct correlation between level of IgG and disease severity was observed.

Conclusion: Increased level of immunoglobulin G and its direct correlation with severity of psoriasis may suggest an activation of 2nd immune defense that try to reduce the severity of disease.

KEYWORDS: Psoriasis, acute phase, chronic phase, Immunoglobulins.

INTRODUCTION

Psoriasis vulgaris is a chronic, immune-mediated, inflammatory, skin problem found in 1- 2% of the population. About 90% of cases of psoriasis cases were plaque-type psoriasis. The typical clinical sign and symptoms are erythematous, pruritic plaques enclosed in shiny scales cover many parts of skin including surfaces of the limbs, trunk and the scalp.¹ The two peaks of onset of psoriasis are between the age 20 to 30 years and between the age of 50 to 60 Years and t equally in both sexes.² This ailment may be associated with various comorbidities including malignancy and cardiovascular problem.³ The disease has poor impact on quality of life including

impact on quality of life including the problems of anxiety, depression, stigma and in some cases suicidal deeds.^{4,5}

Apart from genetic propensity, risk factors that activate psoriasis include infection, dugs, infection, metabolic issues, stress, smoking, and sunlight. Drugs that can aggravate psoriasis include beta-blockers, anti-malarian, calcium channel blockers, captopril, lipid lowering, interferon and penicillin.⁶ These factors affect body immune system that results in the development of extra blood vessels and enhances no of skin cells.⁷

Psoriasis vulgaris is arbitrated by the cells /molecules of both the adaptive and innate immune systems. The activated pathways of immune system in psoriasis presents intensifications of immune circuits in normal skin of human. These include epidermal keratinocytes the major contributor in innate form of immunity, which can stimulate and stop types of T cells which are employed to the skin.⁸ Both Cellular adaptive and humeral adoptive immunity are explained in with psoriasis.⁹ Five major circulating Immunoglobulin in sera IgA, IgG, IgM, IgD, and IgE are formed in plasma or β cell and their synthesis is activated by an immune response to the foreign elements/microorganisms. IgG is principally present in extracellular fluid and blood circulation and efficiently opsonizes pathogens and stimulate the complement system. Since the circulating concentrations of antibodies

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IgG were related with the severity of ailment of psoriasis it is believe that in disease psoriasis a pathogenetic relationship along with systemic inflammation may exist.⁹

Psoriasis is a wearisome disease for patients. It may affect perceptions of patients for themselves and this may initiate psychologic problems like depression. Patients with some degree of skin disease may still have noteworthy psychosocial problems. This study designs to study to find the correlation of immunoglobulin G with severity of psoriasis.

METHODOLOGY

This cross-sectional descriptive study was conducted at Sir Ganga Ram/Hospital Lahore and Niazi Teaching Hospital Sargodha. Study duration was six months from January 2020 to June 2020. One hundred patients of psoriasis (confirmed by Dermatologist) were included in the study. Age range of patients was 35-45 years. Study was included both genders. Patients with psoriasis—aged from 35 to 45 years, both genders with healthy status were included in the study. Patients with other dermatological diseases were excluded from the study. Questionnaire based on age, gender, duration of illness, type and severity of problem etc and biochemical test including immunoglobulin G were filled by consented patients. The study comprised into patients and controls groups. 50 age matched Subjects with no history of skin disease were taken as controls. For immunological assessment, IgG was measured by the technique of ELISA. Letter of IRB was taken by Research Development Ethical Committee of Niazi Teaching Hospital Sargodha,

Statistical analysis Data was analyzed by SPSS 19.0. Data presented were the means and standard deviations. Variables of both patients and controls were compared by independent student -t- test. Pearson correlation coefficients were applied to find the correlation between immunoglobulin G $P \leq 0.05$ was considered as statistically significant.

RESULTS

Mean age of male patients included in this study is 36 years and of female patients is 43.00 year. Majority of the male and female patients belong to middle class and few belong to lower class. Family

history shows that most of male and female patients have no family history. On the other in male patients some shows asthma, diabetes, whereas in female some patients shows joint pain and asthma (Table 1).

Level of immunoglobulin G was significantly increased ($P < 0.001$) in male patients as compared to the level of immunoglobulin G of their control subjects. On the other the severity of index in male patients was 59.60 percent and the duration of disease of patients was 4.48 years. A direct correlation between IgG and disease severity was observed in male subject with r-value 0.3768 (Table 2 Fig 1).

Level of immunoglobulin G was significantly increased in female patients as compared to the level of immunoglobulin G of their control subjects. On the other the severity of index in patients was 61.40 percent and the duration of disease of patients was 6.43 years. A direct significant correlation between IgG and disease severity was observed in female subject with r -value 0.5203 and significant difference ($P < 0.01$) (Table 3 & Fig 2).

Table 1: Physical characteristics of male/female patients with psoriasis

Age (years)	36.56±2.85	43.00±2.69
Body weight (Kg)	72.60±2.18	73.48±1.82
Blood Pressure (mm/Hg)	120/75±0.92/0.94	125/80±2.09/1.73
Socioeconomic status	Middle class (22), Lower middle class (3)	Middle class (15) Lower middle class (10)
Diet	Mixed food (10) Junk food (12) Vegetable/Meat food product (2)	Mixed Food (5) Vegetable food (14) Fatty/meat food (4/2)
Occupation	Job (16) Student (6) Retired (3)	House wife (23) Job (2)
Family history	Family history (4) No family history (21)	Family history (4) No family history (21)
Any other disease	Asthma/DM (2) Allergy (2) No other disease (20) Tropical disease (1)	Joint pain (2) Asthma (2) No other disease

Values are expressed as mean±s.e.m. NO of cases in parenthesis

Table 2: Biochemical parameters, Severity of disease index and duration of disease in male patients with psoriasis and its comparison with control subjects

Parameters	Male Patients (25)	Control subjects (20)
Immunoglobulin G (gm/dl)	13.74±0.49**	10.56±0.80
Severity of disease index (%)	59.60±4.08	-
Duration of disease (years)	4.48±0.62	-

** $P < 0.001$ = Highly significant differenc

Values are expressed as mean±s.e.m. NO of cases in parenthesis

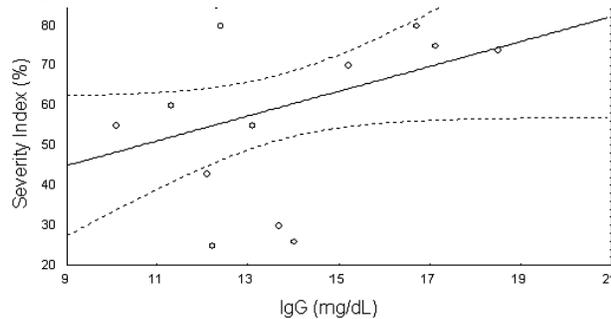


Fig 1: Correlation between the level of IgG and disease severity in male psoriatic patients

Table 3: Biochemical parameters, Severity of disease index and duration of disease in female patients with psoriasis and its comparison with control subjects

Parameters	Female Patients (25)	Control subjects (20)
Immunoglobulin G (gm/dl)	14.81±1.12**	12.00±0.16
Severity of disease index (%)	61.40±4.15	-
Duration of disease (years)	6.43±4.85	-

** $P < 0.001$ = Highly significant difference

Values are expressed as mean±s.e.m. NO of cases in parenthesis

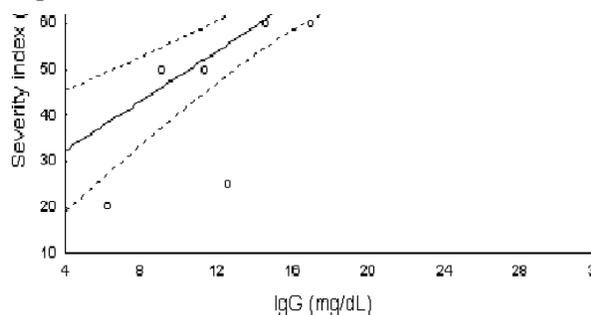


Fig 2: Correlation between the level of IgG and disease severity in female patients with r value 0.7321 ($P < 0.001$)

DISCUSSION

Innate and adaptive immune systems are thought to be responsible for pathogenesis of psoriasis, while well-recognized environmental factors like smoking and emotional stress can modify disease severity.¹⁰

According to our study male patients may develop psoriasis earlier (age 36 year) than female (43 years). A few patients have family history with joint pain and asthma. However, a study observed that the mean age of patients was 50.4 year and female were more respondents than male. Study also found that family history is not the reason of developing disease in both genders.¹¹

Level of immunoglobulin G was significantly increased in both genders of psoriasis. We agreed with the studies who found humoral changes i.e increased immunoglobulin along with IgG in patients with psoriasis.¹² It is demonstrated that various humoral changes occurred in psoriatic skin. However a study stated that in psoriasis patients, especially those with severe disease, high values of Immunoglobulin A, Immunoglobulin E and IgG along with antinuclear antibodies was seen. These antibodies may be seen in the stratum corneum, where they may activate complement system and attract neutrophils.¹³ A study found a rise in the values of serum IgG activity along with a rise in the activity of anti-IgG in the serum of majority of the patients with psoriasis. This showed the role of auto-immune course in psoriasis. This study concludes that the autoantibodies are found to be present in psoriasis patients or latent autoimmune diseases that may develop in psoriasis patients without any clinical sign and symptoms¹⁴. We observed high severity of index (59 to 61) in both male /female patients with duration of disease was 4 to 6 years. However a study found that majority of patients has moderate to severity of index with a duration of 8 to 10 year.¹⁵ Another study stated that based on body surface area / Psoriasis Area and Severity Index criteria, moderate-to-severe psoriasis was proved in 79 % of patients.⁶

We observed a direct correlation between IgG and disease severity in both gender. A study also observed that IgG were specifically raised in psoriatic patients and correlated with disease severity, signifying that an underlying pathogenic relationship and a contribution to systemic inflammation exists.¹⁷ A study demonstrated that many cells of the immune system shows the receptors for the constant part or (Fc) region of immunoglobulins G recognizes immune complexes and Ig-opsonized cells. It is proposed that heterogeneous molecules are take part in regulating and executing antibody-mediated responses, including cytokine release, respiratory burst, internalization, and killing.^{18,19}

Psoriasis is proposed to be an autoimmune ailment caused by improper activation of the cellular IgG-anti-IgA antibody levels, modification in function of polymorph nuclear leukocytes reduces the no of T cells, and a rise in activity of beta cells.²

CONCLUSION

Increased level of immunoglobulin G and its correlation with severity of disease may suggest an activation of 2nd immune defense that try to reduce the severity of disease.

Conflict of Interest: None

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Author's Contribution

Rukhsan Khurshid	Study design, data, collection data analysis and interpretation of results and manuscript writing. approved final version
Saima Rasheed	Data acquisition, manuscript writing, reviewed and approved the manuscript.
Shakil Ahmed	Study design, revise manuscript critically, make revisions and approve it
Huma Ashraf	Study design, data collection, revise draft and formatting of final manuscript. Revised and approve the final manuscript.
Gul-e-Raana	Study design, data collection, revised and approve the final manuscript.
Maira Mahmood	study design, data collection and approve final manuscript
All authors are equally accountable of accuracy, integrity of all aspects of the research work.	

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