EVALUATION OF SUB-POPULATION OF LYMPHOCYTES AND SERUM IMMUNOGLOBULINS IN PSORIASIS

D. C. GOVIL * A. K. BAJAJ † S. C. GUPTA ‡
V. N. MITTAL ‡ AND S. P. DWIVEDI $

Summary

Sub-populations of lymphocytes and serum immunoglobulins were studied in 56 patients with psoriasis. Absolute T lymphocyte count was found to be significantly decreased. Though the null cells showed an increase, absolute B lymphocyte count was normal. The decrease in T cells was found to be directly proportional to the extent of cutaneous involvement. Quantitative estimations of serum IgA and IgM were normal whereas IgG was found to be reaised. The possible mechanism of these changes in psoriasis has been discussed.

KEY WORDS : Psoriasis; T and B cells; Immunoglobulins.

Introduction

Psoriasis is a chronic dermatosis, having a variable clinical presentation and unpredictable course. It is believed to be a genetic disorder initiated and precipitated by various factors like trauma, vaccination, emotional upsets, endocrinal derangement and seasonal variations[1]. Recently immunological aspects of psoriasis have been studied by different workers but the contradictory as well as inconclusive immunological data prompted us to undertake the present study.

* Lecturer
† Reader
‡ Professor
$ Post-graduate student
Postgraduate Department of Medicine and Pathology, M.L.N. Medical College, Allahabad.
Address for correspondence
Dr. S. C. Gupta,
Professor of Pathology,
M. L. N. Medical College,
Allahabad, (U. P.)
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Materials and methods

Fifty six patients with psoriasis were included in this study. On the basis of extent of skin involvement (ascertained by the rule of nine), patients were divided into three groups:

Group	Extent of skin involvement in %	No. of patients
A	0—10	29
B	11—40	17
C	41-100	10

In all the cases, the diagnosis was confirmed by histopathology. Absolute T and B lymphocyte counts were done by E and EAC-rosette technique respectively[2,3]. The null cells were calculated after deducting T and B lymphocytes count from absolute leucocyte count (ALC). Quantitative assay of serum IgG, IgA and IgM was done in 24 patients by radial immuno-diffusion technique[4] using W.H.O. standard serum No. 67/97.

Twenty-six apparently healthy and age matched individuals from the same socio - economic strata (mostly the

attendants of the patients) were studied as control.

Results

The absolute T, B and null lymphocyte counts in psoriasis and control subjects showed statistically significant decrease in absolute T lymphocyte count (ATC) in the former ($P < 0.001$). In patients of group 'C', the ATC was significantly lower even when compared to group 'A' or 'B' ($P < 0.05$). The decrease in T cells was found to be directly proportional to the extent of cutaneous involvement. Absolute B lymphocyte count did not show any appreciable change. However, null cells were found to be significantly raised (Table 1).

Quantitative estimation of serum immunoglobulins showed that the alterations were not related to the extent of the disease. Normal levels of serum IgA and IgM were found in psoriasis, while serum IgG was found to be significantly raised ($P < 0.001$) in comparison to that of the controls (Table 2).

Discussion

Rosette formation with unsensitized sheep erythrocytes is a characteristic of human T lymphocytes. This is related to a specific surface membrane receptor. In the present study significantly diminished levels of absolute T cells indicated depressed cell-mediated immunity. The depression was found to be directly proportional to the extent of cutaneous involvement. Though the null cells showed an increase, the absolute B lymphocytes count was normal. Similar observations have been made by other workers[5,6]. However, Levantine and Brostoff[7] did not find any alteration in T lymphocytes. The decrease of T cells in psoriatic peripheral blood probably represents a decrease in a subset of thymus-derived helper or suppressor cells in the control of antibody production by B lymphocytes. The present methods of evaluating lymphocyte markers in peripheral blood are unable to distinguish the subpopulation of helper and/or suppressor T cells. However, the likelihood of

TABLE 1
Absolute T, B and Null cells in psoriasis

Subjects	No. of cases	Lymphocyte count (Mean ± SD)		
		T	B	Null
Control	26	1662±314	491±164	275±152
Psoriasis patients	56			
Group A 29		1557±388	545±133	512±151
Group B 17		1446±238	515±118	596±180
Group C 10		1200±487	410±251	533±117
P Value		<0.001	NS	<0.001

NS = Not significant

TABLE 2
Mean serum immunoglobulins in psoriasis

Subjects	No. of cases	Serum immunoglobulins in mg% (Mean±SD)		
		IgG	IgA	IgM
Control	26	1191.0±119.4	218.9±29.2	121.0±21.1
Psoriasis patients	24	1411.0±328.4	214.3±37.1	117.3±17.5
P-value		<0.001	NS	NS

NS = Not significant

such populations have been described recently in human blood[8] and thymus[9].

Another explanation could be an influence of extrinsic factors on E-rosettes. These extrinsic factors could be circulating immune complexes and/or anti-lymphocyte antibodies. Very little is known about this phenomenon in psoriatic patients. Guilhou *et al*[10] and Florin-Christensen *et al*[11] have described the presence of anti-IgG antibodies in patients with psoriasis. Such complexes are known to interfere with the assessment of B and T cells in diseases such as rheumatoid arthritis and systemic lupus erythematosus[12]. Further more, the occurrence of antibodies directed to lymphocyte surface determinants[13,14], not yet demonstrated in psoriasis, could greatly modify the evaluation of lymphocyte markers and T cell functions. The absence of relative increase in B cell markers in the present study would support this hypothesis.

Serum immunoglobulin studies showed normal levels of IgA and IgM whereas IgG was found to be significantly increased. The observations of increased serum IgG in psoriasis are similar to those of other workers[15,10,16]. On the contrary, normal serum IgG values have been reported by some[17,18] and diminished values by others[19,5] in psoriatic patients. Similarly, varied reports for serum IgA and IgM have been also recorded by various workers.

The significance of immunoglobulin disorders in psoriasis still remains an enigma. The IgG increase in the present study could either be due to an antibody response to a hypothetical infectious agent or due to circulating anti-stratum corneum antibodies in psoriatics. However, the possibility of an unknown link between IgG production and thymus or T cell function cannot be ruled out.

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