IMMUNOLOGICAL RESPONSES IN PSORIASIS

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Summary

Serum IgG, IgM and IgA levels as well as lymphocyte transformation to phytohaemagglutinin (PHA) were studied in 23 patients with psoriasis and compared with 44 healthy subjects. Significant elevation in IgG and IgA levels was found. Serum IgM levels were normal. There was no significant depression in H -Thymidine uptake by the lymphocytes of these patients when stimulated with PHA.

Introduction

Immunological studies in psoriasis have so far displayed only inconclusive and controversial results. An increase in serum IgA was a constant finding[1,2,3,4]. The serum IgG levels were found to be normal by some workers[3] and others found it to be increased[4]. Krebs et al[5] reported a decrease in serum IgM levels of these patients. Further, an increase in anti-IgG factor as shown by Rimbaud et al[3] and Guilhou et al[4] suggested an auto-immune process in psoriasis. A depression in cell-mediated immunity showed by Epstein and Maibach[6] was contradicted by other recent workers[7].

In the present study an attempt has been made to ascertain the role played by the humoral and cell-mediated immunity in psoriasis.

Material and Methods

A total of 67 persons, 23 patients with psoriasis attending the skin and V. D. clinic of Sir Sunderlal Hospital, Banaras Hindu University and 44 healthy persons, mostly the attendants of these patients or others who were not suffering from any type of skin disorders at the time of study were included. The age of these patients varied between 14-60 years, the average being 35 years. Five of these patients were females and the rest males. None of the patients were receiving any medicines at the time of study.

The cell mediated immunity of 37 persons was studied by H^3 -Thymidine uptake in whole blood culture stimulated with PHA[8]. In short, 1 ml of venous blood withdrawn aseptically with a glass syringe was immediately mixed with 10 units of heparin (preservative free, Microlab, Bombay) in a screw cap culture tube (120 x 65 mm). Eight ml of RPMI—1640 (Microlab, Bombay) supplemented with 100 I. U. of penicillin and 0.1 mg of streptomycin per ml was added to the blood. The

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resultant suspension was divided into 3 ml aliquots and distributed in culture tubes; 0.1 ml of PHA—P (Microlab, Bombay) was added to two tubes and the third tube served as control. After labelling properly the tubes were incubated at 37°C in 5–10 per cent Co_2 atmosphere in an upright position for 3 days. At the end of 72 hours, 0.1 ml, of H^3—Thymidine (20 μ Ci per ml, Specific activity 50 Ci per m mole, Schwarzlmann, U. S. A.) was added and incubated further for 24 hours. On the 5th day, the cultures were terminated, washed twice with cold isotonic saline, macromolecules were precipitated with 5 percent cold TCA and treated finally with cold methanol twice. The resultant material was bleached with 1 or 2 drops of 20 percent Hydrogen peroxide and dissolved in hyamine hydroxide (Sigma Chemicals, U. S. A.) at 56°C for half an hour. Then 5 ml of scintillation fluid (PPO: 5 g/litre, POPOP: 0.1g/litre in toluene base) was added and transferred to counting vials. The counting was done in liquid scintillation counter.

Immunoglobulin estimation :— Quantitative estimation of IgG, IgM and IgA was done in 14 sera of psoriatics and 30 normal controls by single radial immunodiffusion technique of Mancini[9] as modified by Fahey[10].

Results

Cell-mediated immunity :— The lymphocyte transformation with PHA was measured by increased DNA synthesis and expressed as counts per minute (cpm) of H^3 — Thymidine per ml of blood. (Fig). The mean count in healthy controls was

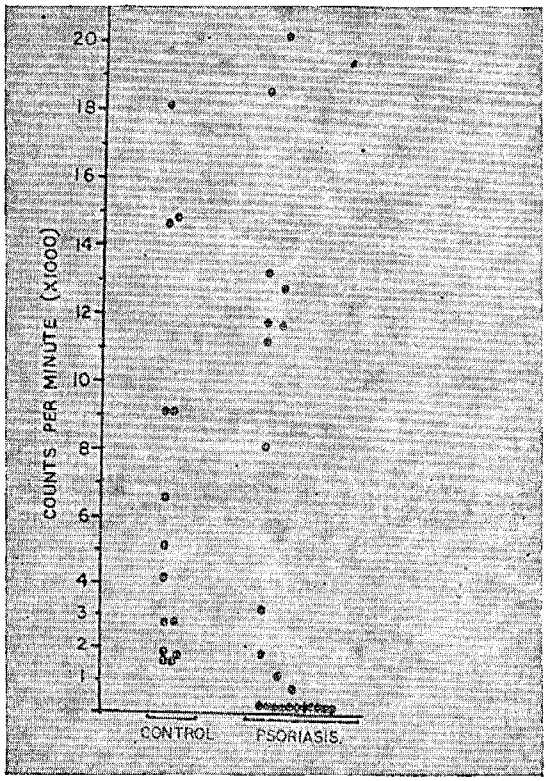

Fig.

6619.83 cpm + 5614.4 S. D. whereas in the patients with psoriasis it was 6726 cpm + 3930.28 S. D. The difference between these values was not significant statistically ($t = 0.02$ and $P > 0.9$).

Immunoglobulins :— Table 1 shows the levels in mg percent of various immunoglobulins in control subjects and the patients of psoriasis. The serum IgG and IgA of the psoriatics were raised when compared with the normal values. These were statistically significant (IgG: $t = 3.99$, $P < 0.001$ IgA : $t = 21.22$, $P < 0.001$). Although, the mean value of IgM in the patients of psoriasis was more than the normal values, it was not statistically significant ($t = 0.23$; $P > 0.9$).

TABLE 1

Immunoglobulin levels in mg% in psoriatics and control subjects

Ig	Controls			Psoriatics		
	Range	Mean	S.D.	Range	Mean	S.D.
IgG	684—1551	1222.69	251.11	400—2520	1468.57	35.3
IgA	112—217	163.33	27.75	128—488	282.86	43.3
IgM	61—123	84.71	20.28	56—216	104.86	37.0

Discussion

The results of earlier investigations on serum immunoglobulins in psoriasis are controversial. Guilhou et al[4] reported an increase of serum IgG and IgA levels along with salivary IgA and IgE. The mean IgM levels were reported to be decreased by Krebs et al[5] and Fraser et al[1]. A significant rise in serum IgG and IgA levels found in this study confirm their findings. But this study did not reveal any decrease of IgM levels in psoriatics. In fact, in 2 out of 14 sera tested in this series, there was a marked depression of IgM. The significance of this finding can be hardly explained. On the whole, there is no significant elevation or depression of IgM antibody in these cases. This is an important finding when compared with the findings of others[1,5].

The role of cell-mediated immunity in psoriasis is being investigated by many workers recently. Epstein and Maibach[6] suggested a marginal depression in CMI as tested by DNCB sensitization. The cell-mediated immunity towards epidermal antigens has been reported to be normal[11,12]. Similarly, Levantine and Brostoff[7] did not find any significant depression of lymphocyte transformation to PHA. The same workers found no decrease in the number of T-lymphocytes though the peripheral lymphocyte counts in their patients was decreased. The results of the present study also reveal no depression of lymphocyte transformation to PHA and hence in cell-mediated immunity.

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