PSORIASIS AND DIABETES MELLITUS

J. A. SUNDHARAM * RATAN SINGH † AND P. S. AGARWAL ‡

Summary

Twenty uncomplicated cases of psoriasis and an equal number of matched controls were evaluated using the oral and steroid primed glucose tolerance test. Six of the twenty psoriatics (30%) studied showed an abnormal glucose tolerance whereas only one of the twenty control subjects (5%) showed abnormality ($p<0.05$). A relationship was found between abnormal glucose tolerance and surface area involved by psoriasis.

The existence of a relationship between psoriasis and diabetes mellitus, suggested as early as 1897 by Strauss[1], remains undecided in spite of numerous studies. Many workers have reported studies indicating the presence of a relationship between the two diseases[2-7], whereas it has been refuted by several others[8-13].

Lynch[12] stated that an apparent increase in the incidence of elevated blood glucose levels in psoriatics when compared to the general population seen in previous studies was not found when psoriatics were compared to appropriate control groups, noting in particular, a failure to consider the chronological age of the patients when comparing psoriatics to controls. He argued that when investigating a study group composed primarily of adults, one could not use as a control group, the general population (where 50% or more of the population is under 25 years of age); nor could one use a control group which had been evaluated with less accurate tools than were used for the study group; and finally, that one could not relate an increased blood sugar level with the disease diabetes mellitus until more is known about the course of older adults with various degrees of impaired sugar metabolism.

Recently, Burns and Whitehouse[6] and Hajini et al[7] in a study using the standard oral and steroid primed glucose tolerance tests presented evidence for abnormal glucose tolerance in psoriatic patients. However, neither group of investigators had used matched controls–they utilized studies by other authors of the steroid primed glucose tolerance tests on the general population as controls, which, as has been mentioned above, has certain inherent drawbacks.

In an attempt to overcome this drawback and the fact that such an investigation might be helpful in resolving the obscure relationship between psoriasis and diabetes mellitus, it was thought necessary to undertake a planned study

* Resident
Dept. of Dermatology and Venereology
† Professor and Head
Dept. of Dermatology and Venereology
‡ Professor and Head
Dept. of Biochemistry,
Maulana Azad Medical College,
Associated L. N. J. P. N. & G. B. Pant Hospitals, New Delhi-110002.

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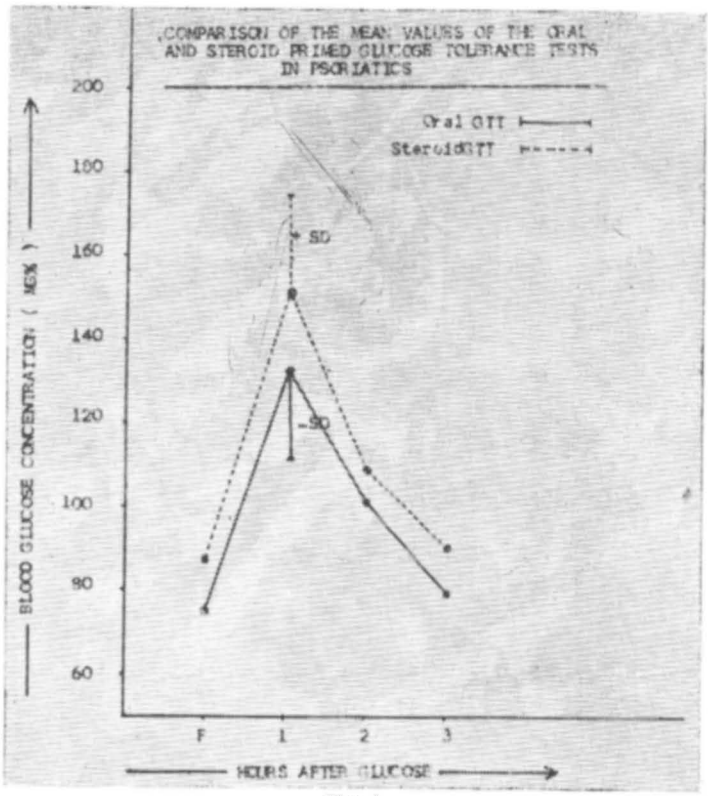

Fig. I

using controls matched particularly for age, to answer conclusively whether there is actually any abnormality of glucose tolerance in psoriasis or not.

Material and Methods:

Twenty patients with psoriasis and twenty comparable control patients were chosen for study from patients attending the Dermatology and Venereology OPD of L.N.J.P.N. Hospitals, New Delhi. No patient with known diabetes mellitus was included and every effort was made to exclude patients with complicating medical problems that might produce aberrations in glucose tolerance such as a history or clinical evidence of liver disease: a history of a regularly high alcohol intake; presence of pyogenic infection or fever; an obstetric history of unexplained stillbirth, abortion, overweight baby or some severe congenital anomaly. Also excluded were patients on diabetogenic drugs eg. thiazide diuretics, oral contraceptives, systemic corticosteroids or those on extensive topical applications of fluorinated steroids in the preceding few months, and patients with a history of receiving systemic antimetabolite therapy. All patients were non-obese (within 10% of their ideal body weight) had no endocrinal dysfunction, and were taking a normal diet before the test.

A 3-hour oral glucose tolerance test was conducted after an overnight fast as described by Marble[14]. The patients who were normal to this test were subjected to the steroid primed glucose tolerance test. The steroid priming was achieved with two doses of 10 mg of prednisolone at $8\frac{1}{2}$ hours and two hours prior to the start of the test. The criteria for the oral and steroid primed glucose tolerance tests were those described by Marble[14].

The blood glucose was estimated by the method of Asatoor and King[15] which estimates the true blood glucose level. Venous blood was used for the estimation.

The twenty psoriatics were further classified into grades according to the extent of surface area involved (calculated by the "rule of nines"):

Grade I :	less than 25% of body	(8 patients)
Grade II :	25–50%	(4 patients)

Grade III : 50–75% (8 patients)
Grade IV : more than 75% (no patients)

The ages of the twenty psoriatics chosen for study ranged from 20–50 years. The mean age of the psoriatics was found to be 29.70 years, and that of the control group was 29.75 years. The duration of the disease was more than one year in fifteen (75%) cases, the longest duration being 9 years. None of the psoriatics or controls had a family history of diabetes or psoriasis.

Results :

Of the twenty psoriatics subjected to an oral glucose tolerance test, only one (5%) was found to be abnormal i. e., had chemical diabetes. The remaining nineteen were subjected to the steroid primed glucose tolerance test and five (26.3), were found to show an abnormal value. One patient with psoriasis was found to have a borderline (equivocal) test, during the steroid primed glucose tolerance test; this patient refused consent for a repeat test, and was considered to be "normal" in further calculations.

Of the control group, none of the twenty controls showed any abnormality in the oral glucose tolerance test, but one (5%) showed an abnormality after steroid priming.

Thus, of the twenty psoriatics, six (30%) showed some degree of defect in glucose tolerance in the oral or steroid primed glucose tolerance test, while of the twenty controls only one (5%) showed an abnormality in the steroid primed glucose tolerance test. A statistical analysis of the results showed that this was significant at 95% confidence limits (ie. $p < 0.05$).

Further, it was seen that four of the six patients showing abnormal glucose tolerance had grade III involvement with psoriasis, while the remaining two had grade II involvement ($0.05 < p < 0.1$).

Comment

Burns and Whitehouse[6] noted four of 46 psoriatics with abnormal standard oral glucose tolerance tests, and of the remainder, thirteen had an abnormal cortisone primed glucose tolerance test. They thus found that 17 of 46 patients (i.e. 37%) had an abnormal glucose tolerance; this did not include four

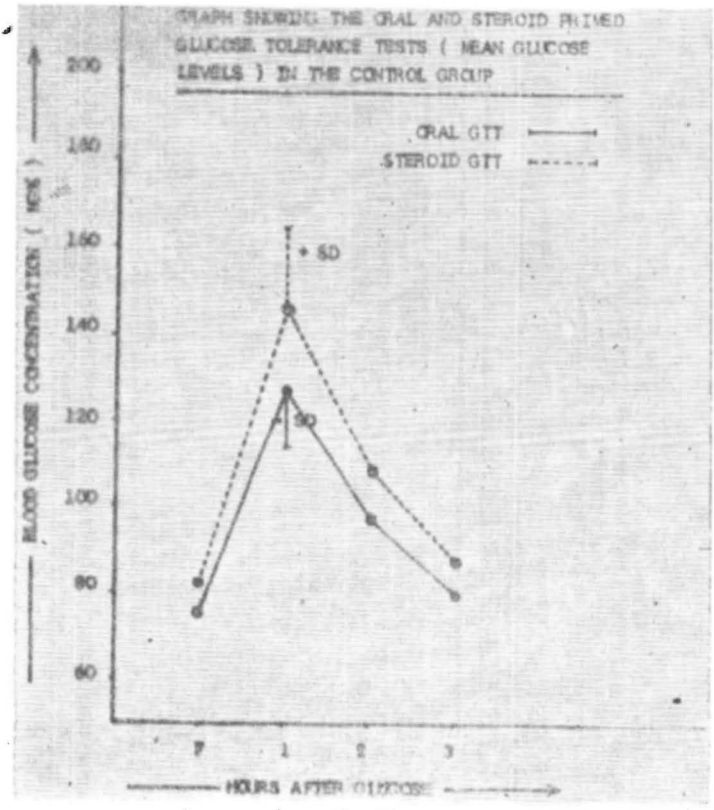

Fig. 2

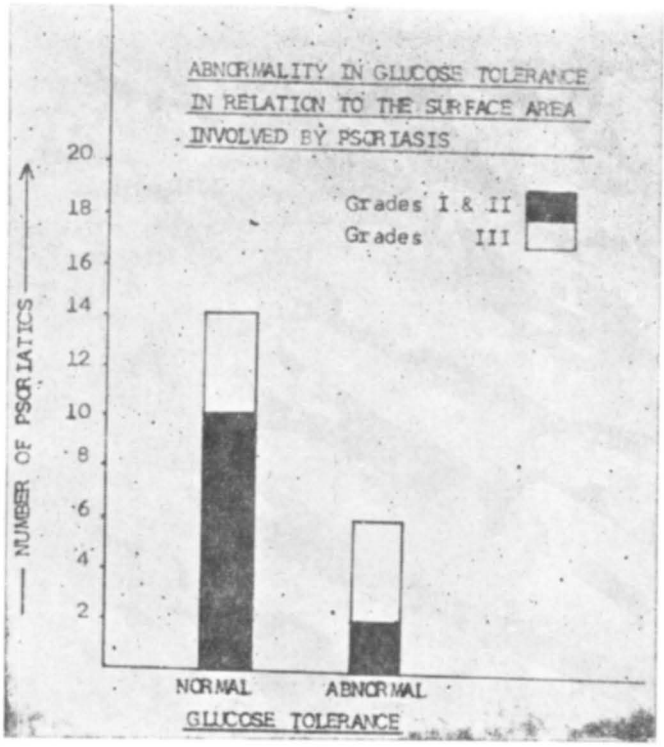

Fig 3

who had borderline steroid glucose tolerance tests. Hajini et al[7] from Kashmir observed ten of seventy psoriatic patients with abnormal oral glucose tolerance tests and six of the remainder had an abnormal prednisolone primed glucose tolerance tests, i.e., a total of 26.8% had abnormal curves: the results obtained in the present study are about the same (30%).

Earlier investigators had speculated about the relationship of psoriasis and diabetes[2,3,4]. However, Lynch[12] suggested that one should not relate an increased blood sugar level with disease "diabetes mellitus". Hyperglycemia (or decreased glucose tolerance) is just one of the many abnormalities seen in diabetes mellitus which should be regarded as a syndrome rather than as a disease.

The decreased glucose tolerance observed in psoriasis may reflect a metabolic disorder specific of psoriasis rather than being indicative of latent diabetes. That this could be so was first suggested by Rechaardt and Lassus[5]: they discussed the pathogenetic role of the increased activity of the pentose shunt. Further, it was seen that patients showing an abnormal glucose tolerance had, in general, more extensive involvement with psoriasis. Similar results were obtained by Hajini et al[7]. This observation also tends to support the hypothesis that the decreased glucose tolerance is in some way related to psoriasis itself than to genetic diabetes.

Recently, much work has been done on the cyclic AMP adenyl cyclase system. A defect in this system has been postulated as an abnormality in both psoriasis and diabetes[16]. It may not be too far fetched to speculate that this may in some way, be related to the decreased glucose tolerance observed in psoriatics.

One practical point, made by Burns and Whitehouse[6] needs to be re-emphasized: patients with an abnormal steroid glucose tolerance test value are more likely to develop further loss in glucose tolerance (i.e , chemical or overt diabetes) than normal individuals when followed up, hence it may be worthwhile to measure postprandial blood glucose levels in such psoriatics at appropriate intervals for early detection of this loss.

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