Acta Dermatovener (Stockholm) 59: 167–170, 1979

ABNORMAL GLUCOSE TOLERANCE ASSOCIATED WITH LICHEN PLANUS

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Abstract. A study was made of 52 patients with lichen planus. Abnormal oral glucose tolerance was found in 19 (36%), including 5 with overt diabetes. The criteria for abnormality were based on an age-related score method. A family history of diabetes was found to be present in 14 (26%). The most common abnormality observed in the glucose tolerance test was an elevation of the blood glucose level 2 hours after administration of the glucose. These results further support the supposition of a disorder in carbohydrate metabolism associated with lichen planus.

Key words: Lichen planus; Glucose tolerance test, abnormal in lichen planus

During recent years it has been suggested that impaired carbohydrate metabolism is possibly involved in the etiology of lichen planus (LP) (4–6). There is a considerable range in the degree of abnormality fo glucose tolerance (GT) as reported in the literature (5, 7, 9). This may be due to the differing criteria used for abnormal glucose tolerance. Another factor may be the small number of patients tested (far fewer than 50) by some authors (6, 9), which could lead to statistical errors. It must also be considered that in some studies (5, 6) GT was studied in patients with oral lesions only, whereas in others (7, 9) patients with both cutaneous and oral lesions were studied.

We present here the results of a study on 52 patients with LP who had cutaneous and mucosal lesions. The investigation was carried out to obtain additional data on this aspect of the disease. An age-related score method was employed for determining glucose intolerance (10).

MATERIAL AND METHODS

The material comprised 52 patients with LP in whom the diagnosis had been made on the basis of clinical and/or histological findings. Twenty-seven had cutaneous lesions only, 5 had mucosal lesions only, and 20 had both cutaneous and mucosal lesions. Active skin lesions were present in 32 patients. Twenty-eight of the patients were males and 24 females; 20 were Jews of Ashkenazi origin and the remaining 32 were of Oriental origin, mostly Sephardi and Yemenite. The age range was from 11 to 76 years, with an average of 49 years. There was severe obesity in only 2 patients and mild obesity in 5. None of these patients was receiving systemic corticosteroids at the time of the test, although some had been applying topical corticosteroid preparations. Each patient was questioned as to a family history of diabetes mellitus.

For the purpose of this study the patients were divided into two groups in accordance to their age. Group I comprising the 25 patients under the age of 50 (13 males, 12 females) and Group II the 27 patients from age 50 upward (15 males, 12 females).

A standard oral glucose tolerance test (GTT) was carried out in 47 patients. After a blood sample was taken for determination of fasting blood glucose, 100 g glucose was given orally and additional samples of blood were taken ½ hour, 1 hour, 2 hours and 3 hours later. Glucose levels were determined in whole capillary blood specimens by the Autoanalyzer "Technicon" with ferricyanide as a reagent. By this method, the following were considered upper-normal values for glucose (1, 8): fasting, 110 mg/100 ml; 1 hour, 170 mg/100 ml; 2 hours, 120 mg/100 ml; 3 hours, 110 mg/100 ml. According to the criteria of Remein-Wilkerson (10) abnormality of the fasting level yields a 1-point score, abnormality of the 1-hour level a ½ point score, of the 2-hour level a ½ point score and of the 3-hour level a 1 point score. For patients over the age of 50, 10 mg for each decade were added to the 1-hour and 2-hour values (11). Chemical diabetes was diagnosed when the score obtained equalled or exceeded 2 points (1, 10). The GTT was diagnosed as having been abnormal but not diabetic when only two levels, those of the 1-hour and 2-hour samples, exceeded the normal limits.

RESULTS

Among the 25 patients under the age of 50 years (Table I), there was a normal GTT in 11, but 5 of these had a family history of diabetes mellitus; one patient was a known diabetic. Chemical diabetes was found in 2 patients, one of whom had a family history of diabetes and a lesser but still significant abnormality was found in one patient (score=1) who also had a family history of diabetes. In 10

Table I. *GTT in patients <50 years of age*

No. of patients	Normal	Family history of diabetes mellitus	Known clinical diabetes mellitus	Abnormal results (mg%) 0	1 h	2 h	3 h	Score
5	+	+						
6	+							
1		+	+					
1						126		½
1							114	1
1		+			236	196		1[a]
1						138	120	1½
1						122		½
1						128		½
1		+				130		½
1						122	118	1½
1						126		½
1					208	176	130	2
1		+		125	265	190	152	3
1						128	116	1½
1		+				122	112	1½
25	11	10	1	1	3	12	7	

[a] Borderline.

patients, 2 of whom had a family history of diabetes, there was only a minor abnormality of no diagnostic significance.

Among the 27 patients aged 50 years or more (Table II), only 6 had a normal GTT, of whom one had a family history of diabetes. Four patients were known diabetics. Chemical diabetes was found in 8 patients, one of whom had a family history of dia-

Table II. *GTT in patients >50 years of age*

No. of patients	Normal	Family history of diabetes mellitus	Known clinical diabetes mellitus	Abnormal results (mg%) 0	1 h	2 h	3 h	Score
1	+	+						
5	+							
1		+	+					
3			+					
1					274	224		1[a]
1					230	166	150	2
1							126	1
1							122	1
1					232	172		1[a]
1		+			220	196		1[a]
1				124	262	272	280	3
1				114	218	139	127	3
1					194			½
1				114	294	180		2
1					214	155	122	2
1		+			196	182	136	2
1				120	230	198	152	3
1							117	1
1				122	295	172	157	3
1						146		½
1							116	1
27	6	4	4	5	12	12	11	

[a] Borderline.

betes, and 3 patients, of whom one had a family history, had significantly abnormal levels in the GTT, with a score = 1. In 4 patients there was only a minor abnormality of no diagnostic significance.

DISCUSSION

It has been implied that there are diverse cultural and racial differences affecting the incidence of diabetes mellitus. The incidence of diabetes among Jews in Israel (3, 12) is, however, no higher than that reported in various surveys of non-Jews made in different parts of the world. In a survey of 15 958 Jews in Israel made during the years 1958–59, in which diabetes was considered to be present when there was glycosuria and a fasting blood glucose level above 120 mg %, Cohen (3) found an incidence of 2.5 % among Ashkenazi Jews and of 1 % among Sephardic Jews. Surveys in the USA have shown that there is documented diabetes in 1–2 % of the population and an abnormal glucose tolerance in a similar number of individuals not previously diagnosed as having diabetes (2). Furthermore, it has been established that among the general population there is a tendency for glucose tolerance to fall with advancing age (1).

In our study of 52 patients suffering from LP, overt diabetes mellitus was found in 5. Altogether there was a marked disturbance in carbohydrate metabolism in 19 patients, with 10 having chemical diabetes (10) and 4 significant but less marked abnormalities. Thus the percentage of abnormal glucose tolerance among these patients was 36 %, a value greatly exceeding that recorded for control patients in the various surveys noted above (2, 3). Moreover, among the 33 patients in whom the GTT was regarded as normal, there were 8 (24 %) with a family history of diabetes. The overall number of patients with a family history of diabetes was 14 (26 %). Abnormality of the GTT was most commonly seen in the 2-hour blood glucose level (present in 24 patients). Abnormalities in the first and third hour levels were seen mainly in patients over the age of 50 years. In the study reported by Powell et al. (9) the most striking abnormalities of the GT were in the high peak levels. These authors found an abnormal GTT in 62 % of the 21 LP patients studied, but it should be noted that they considered a single elevated blood glucose level during the standard GTT as constituting an abnormal finding. Lowe et al. (7) in a later study found an abnormal GT in 42 % of 40 LP patients without a family history of diabetes. However, although the criteria for abnormality used by these authors were stricter, they were not age-related. The pattern of insulin response in the latter series was similar to that seen in typical mild maturity-onset diabetes. Furthermore, none of the patients with an abnormal GTT had demonstrable islet-cell antibodies.

The findings of the study carried out by us on 52 patients with LP lends further support to the possibility that there is a relationship between LP and a disorder of the carbohydrate metabolism (4, 6). Of particular interest in this respect is our finding that in the 5 patients with overt diabetes the development of the lesions of LP preceded the discovery of diabetes by 5–7 years. Should this factor of disordered carbohydrate metabolism be found to play a significant role in the etiology of this mucocutaneous disease, these findings may be of importance in our search for a specific mode of treatment for LP. Further investigation, however, is needed to clarify the meaning of the abnormal GT in LP and the underlying mechanism.

ACKNOWLEDGEMENT

Thanks are due to the staff of the Chemical Laboratory of the Beilinson Medical Center for their assistance in performing the glucose tolerance tests.

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Received June 13, 1978

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