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 for 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 59 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 Remoin-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

<table>
<thead>
<tr>
<th>No. of patients</th>
<th>Normal</th>
<th>Family history of diabetes mellitus</th>
<th>Known clinical diabetes mellitus</th>
<th>Abnormal results (mg%)</th>
<th>Score</th>
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</thead>
<tbody>
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<td>+</td>
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<td>0 1 h 2 h 3 h</td>
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* Borderline.

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

<table>
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<tr>
<th>No. of patients</th>
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<th>Family history of diabetes mellitus</th>
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<th>Abnormal results (mg%)</th>
<th>Score</th>
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betes, and 3 patients, of whom one had a family
tory, 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 dia-
betes 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 1958–1959, 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 popula-
tion 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 com-
monly seen in the 2-hour blood glucose level (pres-
ent 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. Further-
more, 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 possi-
bility 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 develop-
ment of the lesions of LP preceded the discovery of
diabetes by 5–7 years. Should this factor of dis-
ordered carbohydrate metabolism be found to play
a significant role in the etiology of this mucocutane-
ous disease, these findings may be of im-
portance in our search for a specific mode of treat-
ment for LP. Further investigation, however, is
needed to clarify the meaning of the abnormal GT
in LP and the underlying mechanism.

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