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### Skin Tags: A Cutaneous Marker for Diabetes Mellitus

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Two hundred and sixteen non hospitalized patients with skin tags (ST) were studied for the presence of diabetes mellitus (DM) and obesity. Overt DM was found in 57 (26.3%) patients and impaired glucose tolerance test was found in 17 (7.9%) patients. Sixteen new cases of DM were found among this group. All the diabetic patients in the study population had non-insulin dependent DM. Sixty-two (28.7%) of the patients were obese. No correlation was found between the localization, size, colour and number of the ST and the presence of DM. Our study indicates that ST are not associated with increased incidence of obesity compared to the general population. On the other hand, ST are associated with impaired carbohydrate metabolism, and may serve as a means for identifying patients at increasing risk of having DM. (Received September 2, 1986.)

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Skin tags (ST) are small, soft, pedunculated, often pigmented lesions, usually occurring on the eyelids, neck and axillae. The condition is very common, particularly in middle-aged and elderly women. Obesity is a factor that has been associated with the development of ST. Aside from their unsightly appearance, these lesions were thought to bear little clinical meaning (1). Recently, an association between ST and acromegaly (2, 3) and colonic polyps (3-5) has been reported.

In 1976, Margolis & Margolis (6) reported the association between multiple ST and diabetes mellitus (DM). They examined prospectively 500 consecutive hospital admissions for the presence of ST. Approximately 75% of their 47 male patients with ST had elevated fasting and postprandial blood glucose in the diabetic range. Margolis & Margolis concluded that multiple, large, hyperpigmented, bilateral ST were predictive of DM in men. The association between ST and DM was briefly mentioned later (7, 8). However, no further studies confirming this relationship or relating it to the presence of obesity have been published. We therefore undertook our study to test these findings in non hospitalized population of both men and women.

## PATIENTS AND METHODS

Two hundred and sixteen consecutive Jewish patients, referred to the Dermatology Clinic at the Chaim Sheba Medical Center between the years 1984–1986 in whom at least one ST (acrochordon) was found were chosen for investigation. One hundred and thirty four of the patients were men and 82 women. They ranged in age from 19 to 84 years with a mean age of  $46 \pm 17$  years. Patients with known cutaneous manifestations of DM, patients with miscellaneous skin associations with DM (e.g. granuloma annulare, vitiligo, genital pruritus, etc.), patients receiving drugs with a known hyperglycemic effect on pregnant women were excluded from the study. ST were defined as fleshy, pedunculated soft lesions, skin coloured or darker hue that were at least 0.2 cm in height and diameter. Each patient was carefully examined for the localization, number, size and colour of the ST. A detailed history concerning DM was taken. The height and weight of the patients were measured and obesity was determined as 20 percent above the ideal body weight.

Patients without an established history of DM were examined by measuring fasting plasma glucose on two occasions with an interval of one month. In patients with fasting plasma glucose above 115 mg/dl but below 140 mg/dl, a standard oral glucose tolerance test was carried out. Impaired carbohydrate metabolism was determined according to the criteria suggested by the National Diabetes Data Group (9).

## RESULTS

Of the 216 patients with ST, 34.3% (74 patients) had deranged carbohydrate metabolism. This subgroup contained 57 patients with overt DM of the non-insulin dependent type. Other 17 patients had impaired glucose tolerance test. Sixteen patients of this subgroup had not been previously suspected of having DM. Sixty-two patients with ST (28.7%) were obese. Twenty-five (40.3%) of the obese patients had deranged carbohydrate metabolism. The localization, size, number and colour of the ST are shown in Table I. No correlation was found between these clinical features and the presence of DM.

## COMMENT

It is known that there are diverse cultural and racial differences affecting the incidence of DM. The prevalence of DM among Jews in Israel does not differ greatly from that reported in various studies from different parts of the world (10, 11). In our study of 216 patients with ST, 34.3% of them were found to have overt DM or impaired glucose tolerance test. This value is significantly higher than that recorded in the various reports noted above (10, 11).

Margolis & Margolis (6) reported that 72.3% of the 47 male patients with ST had elevated fasting and postprandial blood glucose in the diabetic range. The incidence of DM in our study population, which was composed of both sexes, is much lower. This may be partly due to the different and more strict criteria used by us to determine DM. Furthermore, their study-population was composed of consecutive hospital admissions. Their

Table I. *Clinical features of skin tags/number of patients*

Localization		Size	
Eyelids	103	Small (0.2–0.5 cm)	187
Neck	113	Medium (0.5–0.8 cm)	132
Axillae	146	Large (>0.8 cm)	46
Trunk	72		
		Number	
Colour		Few (1–4)	72
Flesh coloured	92	Moderate (5–10)	85
Hyperpigmented	124	Multiple (>10)	59

results were primarily biased since DM is an important risk factor in cardiovascular complications, which are an important cause of hospitalization.

All the diabetic patients in the study group had non-insulin dependent DM. This disorder is undoubtedly heterogenous in nature and had been subdivided according to the absence or presence of obesity, as 60% to 90% of the patients with non-insulin dependent DM are obese in Western societies (9). Overweight is a factor that has been associated with the development of ST (12). By using the criteria of 20 per cent above the ideal body weight to determine obesity, 20 to 30 per cent of men and 30 to 40 per cent of women are obese (13). In our study population, 62 (28.7%) patients were obese. This finding suggests that the presence of ST was not associated with a higher incidence of obesity. Furthermore, since 40.3% of our obese patients had deranged carbohydrate metabolism compared to 34.3% in the whole group, it seems that the higher frequency of DM in patients with ST could not be attributed solely to obesity.

Contrary to Margolis & Margolis (6), we did not find a distinctive pattern as to the localization, number, size and colour of the ST, in our patients with DM.

Our data suggest that the presence of ST is not associated with a higher incidence of obesity compared to the general population. However, the recognition of ST may be an important marker for the presence of non-insulin dependent DM. Patients with non-insulin dependent DM may be asymptomatic for years and decades and show only slow progression of the disease. However, the typical chronic associations of diabetes, namely: macroangiopathy, microangiopathy, neuropathy and nephropathy may be observed in this type of DM (9). Evaluation for DM is therefore recommended in patients with ST.

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