|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
PubMed (National Library of Medicine ID: 101738825)
Index Copernicus Value 2018: 75.71
Original Research Article Volume 4, Issue 2; February: 2020; Page No. 13-17

SKIN TAGS IN TYPE 2 DIABETES MELLITUS: A VALUABLE MARKER

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Article Info: Received 05 January 2020; Accepted 28 January 2020
DOI: https://doi.org/10.32553/ijmbs.v4i2.883
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Conflict of interest: No conflict of interest.

Abstract

Introduction: Acrochordons [Skin Tag (ST)], are common, small, soft, benign connective tissue tumors of the dermis containing loose fibrous connective tissue. They are usually skin colored or brownish pedunculated papules, may be single or multiple, with smooth or irregular surface, ranging 1 mm to 20 mm in diameter. The ST developing in diabetes mellitus (DM) is due to hyperinsulinemia that is increase in insulin-like growth factor-1 (IGF-1) which leads to keratinocyte and fibroblast proliferation.

Materials and Methods: Patients presenting with skin tags to the dermatology OPD in Era's Lucknow Medical College and Hospital from a period of December 2018 to May 2019 were taken into account, 110 cases were enrolled whereas same no. of controls were included in the study. The details of the study were explained to all subjects and informed consent was taken. Detailed history taking and examination was done. The site and number of skin tags was recorded and fasting blood glucose levels of both groups were measured to screen them for DM by WHO criteria (Normal Range <126mg/dl) by venous blood sample taken overnight fasting of 8 hrs.

Result and Discussion: Total no. of subjects were 220 (110 cases and 110 controls), out of which 63.6% were males and 36.4% were females with average age of 44.05 yrs. Duration of skin tags ranged from 6 months to 180 months however 85.5% cases had a single skin tag. Multiple skin tags were common in males (21.4%). Family history of skin tags was higher in cases (41.8%) than in controls. Family history of diabetes mellitus was seen in 15.6% cases and 13.6% controls. FBG levels ranged from 68mg/dl to 220mg/dl in cases, and 65mg/dl to 178mg/dl in controls, with a mean value of 123mg/dl (cases) and 115mg/dl(controls).

Conclusion: Association of Type 2 Diabetes Mellitus (high fasting blood glucose levels) and skin tags was positive in our study. We should encourage patients with skin tags to get their blood glucose levels checked to rule out diabetes mellitus.

Keywords: Acrochordons, Skin tags, Diabetes Mellitus

Introduction

Acrochordons, commonly known as skin tags (ST) are common, small, soft, benign connective tissue tumors of the dermis containing loose fibrous connective tissue.[1]They are usually skin coloured or brownish pedunculated papules, which may be single or multiple, with smooth or irregular surface and range from 1 mm to 20 mm in diameter and are usually asymptomatic.[1]The commonest area involved is the neck and the axillae, the less common areas are the eyelids and major flexors of the body.[1]They have anequal incidence in both sexes, with 59 % of the population manifesting them by the age of 70 years.[4]The mechanism of ST developing inType 2 Diabetes Mellitus (T2DM)ishyperinsulinemia, which increases insulin-like growth factor-1(IGF-1), thereby causing keratinocyte and fibroblastproliferation.[6]Patients with T2DM or Impaired Glucose Tolerance (IGT)are reported to have a greater number of skin tags as compared to the general population.[2]T2DM is a metabolic disease characterized by hyperglycaemia from a defect in insulin regulation.[3] Patients with more than 30 ST (a high number) had a significantly higher incidence of IGT as compared to those who had less than 30.[1]In Indian population, about twice the numbers of individuals with ST are reported to have DM (52%) and they also have a higher IGT, as compared to western population.[2]The association of ST and T2DM if confirmed,ST may be identified as a valuable skin marker forDM and mayalso help in identifying subjects atrisk of developing DM.

Materials & Methods

It was an observational, case control study. This study began with an approval from the ethics committee of Era's

Lucknow Medical College. The subjects were patientsconsecutively attending the Dermatology OPD in Era's Lucknow Medical College and Hospital, for a period of 6 months from December 2018 to May 2019. The inclusion criteria consisted of110 adult patients presenting with ST for the case group, and they were randomly matched in age and sex to 110 apparently healthy subjects without ST for the control group.The exclusion criteria were patients under treatment for DM and pregnancy.110 adult patients of ST and 110 controls defining our inclusion and exclusion criteria were included in the study.

The details of the study were explained to all the subjects and their signed informed consent was taken before their inclusion.Theyunderwent a detailed history taking andclinical examination. The site and number of ST were recorded for the case group. A family history of ST was recorded and fasting plasma glucose (FPG) levelof both the groups were measuredto screen them forDM bythe World Health Organization (WHO) criteria (NR: <126 mg/dl).[5] Venous blood sample were taken after an overnight fast of 8 hours.[5] All the data were recorded in a pre-designed case record form.

Results

A total of 220 subjects (110 cases and 110 controls) were evaluated, of which 63.6% were male and 36.4% female cases (statistically insignificant). The age of cases ranged from 19 years to 78 years, and the mean age was 44.05 years. The duration of skin tag ranged from 6 months to 180 months (15 years), and the mean duration was 51.05 months (4.2 years). The commonest site of skin tag was the neck (96.4%), followed by the axillae (22.7%) and the eyelid (7.3%). The least involved site was the thigh and the scrotum, both 1 case each (0.9%). A single skin tag was present in 85.5% cases, while 14.5% cases had more than one skin tag. In gender wise distribution of cases, 21.4% of males had multiple skin tag (statistically significant p-value: 0.007), compared to 2.5% in female.A family history of skin tag was present in 41.8% cases (statistically significant p-value: <.001) and 10.9% controls, while 15.5% cases and 13.6% controls had a familial history of diabetes. The FBS level ranged from 68 mg/dl to 220 mg/dl in cases, and 65mg/dl to 178 mg/dl in controls. The case group had a mean FBS level of 123 mg/dl (statistically significant p-value:.031), in comparison to 115 mg/dl in the control group. By FBS level, 49.1% of cases (statistically insignificant) and 40% of controls had Diabetes mellitus.

Table 1: Age distribution of subjects

Variable	Parameter	Case	Control	t-value	p-value
Age (years)	Mean	44.05	44.28	.128	.898
	SD	13.200	13.145		
	Min.	19	18		
	Max.	78	79		

Table 2: Gender wise distribution of subjects

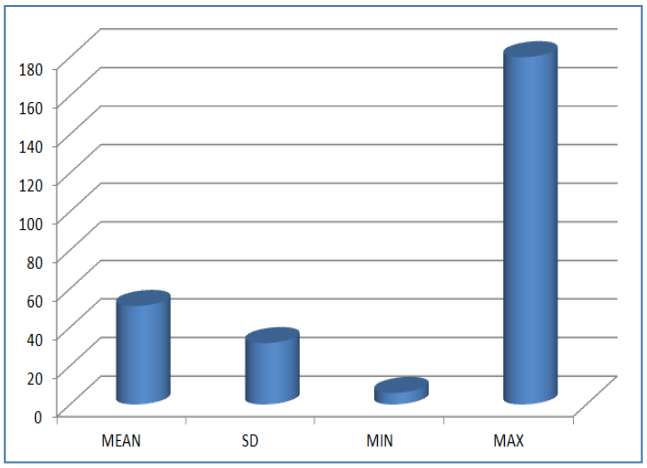
Gender	Case		Control			p-value
	No.	%	No.	%		
Male	70	63.6%	65	59.1%	0.479	0.489
Female	40	36.4%	45	40.9%		
Total	110	100.0%	110	100.0%		

Table 3: Fasting Blood Sugar level among cases and control

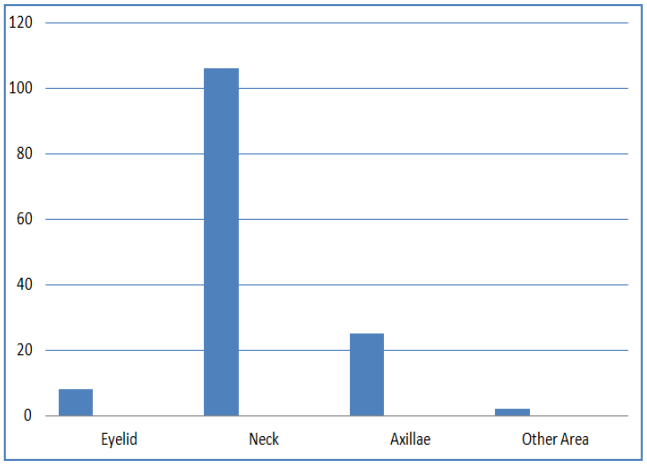
Variable	Parameter	Case	Control	t-value	p-value
FBS value	Mean	123.37	115.35	2.17	**.031**
	SD	30.054	24.558		
	Min.	68	65		
	Max.	220	178		

Table 4: Presence of Diabetes Mellitus in case and control group

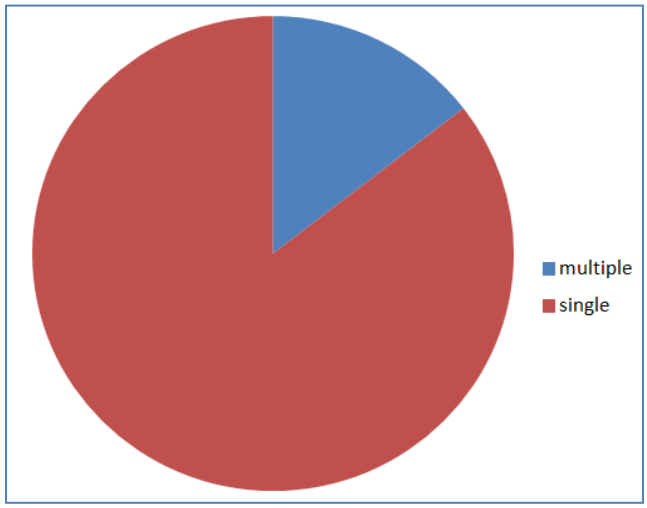
FBS	Case		Control		chi sq	p-value
	No.	%	No.	%		
Present	54	49.1%	44	40.0%	1.84	0.175
Absent	56	50.9%	66	60.0%		
Total	110	100.0%	110	100.0%		



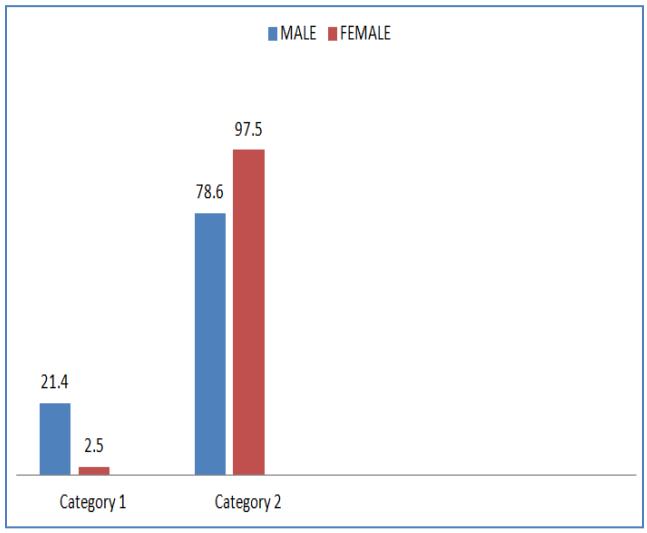
Graph 1: Duration of Skin Tags in cases



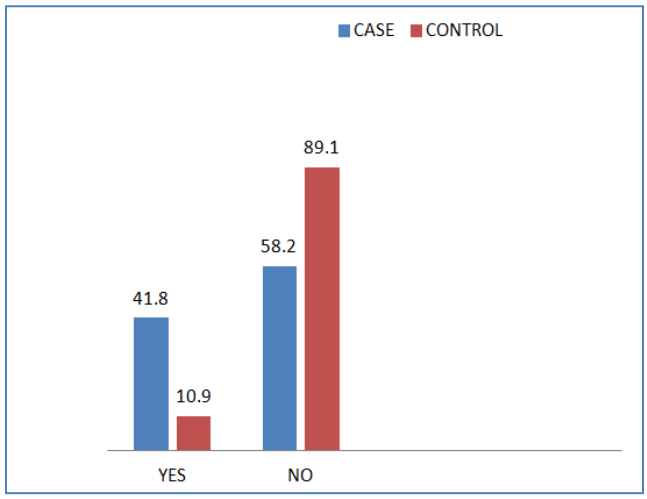
Graph 2: Site of involvement of Skin Tag in Cases



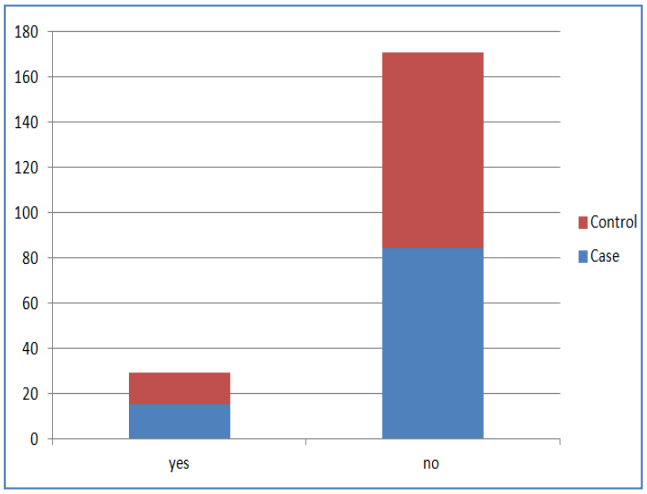
Graph 3: Number of Skin Tags in Cases



Graph 4: Gender distribution of cases with number of skin tags



Graph 5: Family history of Skin Tags among Subjects



Graph 6: Family history of Diabetes Mellitus among Subjects

Figure 1: Giant acrochordon

Figure 2: Acrochordons showing incarceration over an erythematous background

Figure 3: Multiple acrochordons mixed with senile comedones in an elderly male

Figure 4: Multiple acrochordons with Acanthosis Nigricans

Discussion

In this study, we found ST to be associated with a higherprevalence of mean FBG level, (123.37 mg/dl in cases vs. 115.35 mg/dlin controls), but not with DM (49.1% in cases vs. 40.0% in controls).Shrestha et al, found ST cases had a significantly higher prevalence of DM (45.1%) than the controls (5.9%).[3]Shah et al, observed 52% of ST cases having DM.[2] On the other hand Maluki et al, found no significant difference in FBG level.[1]Majority of cases(85.5%) have a single ST. Multiple ST were common in male cases (21.4%), as compared to female cases. It has been observed that, multiple ST may be more sensitive than the AcanthosisNigricans (AN) to detect hyperglycemia, but it might be less specific.[10]In the present study, a family history of STwas significantly high incases(41.8%) than in controls, whereas Maluki et al. found a higher positive history in 98% cases.[1]On the other hand, Shah et al. found asignificantly higher familial history for DM.[2]We found the commonest site of ST involvement were; the neck (96.4%), followed by the axillae (22.7%) and the eyelid (7.3%), while the least involved site was the thigh and the scrotum.Whereas, Shrestha et al, found ST on neck in 86.3%, over axillae in 31.4% and 2% over other sites.[3]We, found no correlation between the number and distribution of the ST, similar to finding of Shah et al and Shrestha et al.[2,3] The possible cause of the neck being the commonest involved site in ST, might be due to high peripheral aromatization of androgens to estrogens in the upper body fat area.[3]In our study, the commonest age of ST was 44.05 years, whilein Shah et al,it was 54 yearsand Shrestha et al, found itto be 55 years.[2,3]This was contradictory, as we found a relatively lower age of presentation. There was no gender preponderance in ST cases, but some studies have suggested an elderly female prevalence.[7,8,9]The only concomitant skin condition in the ST cases was, the AN present in40 % over the neck area and the axillary area, this is in line withShrestha et al,Tamega et al andBhargava et al.[3,4,6]Thehigh levels of hormones such as estrogen, IGF-1 (insulin-like growth factor-1), insulin, TGF (transforming growth factor) and epidermal growth factor (EGF) are responsible for ST.[4]Hyperinsulinemia, is the background for the link between ST and DM.[3]To our knowledge, our study has the largest sample size in the Indian subcontinent region, till date. The observations of this study are partially consistent with other similar studies.

Conclusion

To conclude, we propose that a high FBG level, is associated with ST. As, cases with hyperglycemia are highly prone to develop Type II, DM with increasing age, thus ST might be an association with Diabetes.So, people with high FBG level must undergo life style behavior modifications. Multiple ST, is a sensitive indicator of high FBS level. Moreover, the presence of a coexisting skin condition of AN, ascertains the pathology of insulin resistance. Individuals with multiple ST should be screened for DM. The life style behaviors, additional physiological and laboratory measurements, may be necessary to establish a firm association of ST and DM.

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