DOI: 10.14260/jemds/2015/931

ORIGINAL ARTICLE

SKIN TAGS AND ITS ASSOCIATION WITH SYSTEMIC ILLNESSES

Ramya N[1], Bhanu Prakash[2], Sharath Kumar B. C[3]

HOW TO CITE THIS ARTICLE:
Ramya N, Bhanu Prakash, Sharath Kumar B. C. "Skin Tags and its Association with Systemic Illnesses". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 37, May 07; Page: 6402-6411,
DOI: 10.14260/jemds/2015/931

ABSTRACT: BACKGROUND AND OBJECTIVES: Skin tags (Acrochordons) are very common benign tumor of the skin. It is seen in 25% of population, particularly in women in advancing age and in pregnancy. Skin tags are small, soft, pedunculated and papillomatous lesions usually seen on eyelids and major flexures of the body. Skin tags are entirely asymptomatic and diagnosis is unmistakable. Many cutaneous lesions have been well established to be associated with some systemic diseases and this has been proven beneficial as it helps in early diagnosis. **METHODS:** A total no of 50 patients with skin tags were included in the study. Detailed history, thorough physical examination and relevant investigations were done to confirm the systemic manifestations when present. **RESULTS:** In the study the patient's age ranged from 18–65 yrs with female - male ratio 1:1.17. The number of skin tags among the 50 patients ranged from 1–74. In our study we found that 74% of our patients with skin tags were either obese or overweight, 24% of our patients fulfilled the criteria of metabolic syndrome, 36% of the patients were diabetics & 4 of our patients had evidence of thyroid disorder. **INTERPRETATION & CONCLUSION:** Presence of multiple, hyper pigmented skin tags at more than one site can be a marker for diabetes, obesity and metabolic syndrome. All such patients should be evaluated thoroughly for detecting such illnesses. This study thus emphasizes the need for systemic evaluation of all patients with skin tags for early management and improved quality of life by life style modification.

INTRODUCTION: Skin tags (acrochordons) are common, asymptomatic benign tumors of the skin, composed of loose fibrous tissue.[1] They occur mainly on the flexures as small, soft, pedunculated protrusions of varying size ranging from few millimeters to centimeters. These lesions are seen both among men and women, but very commonly in women at menopause or later. Despite its common prevalence little is known about the physiology of why it develops. Apart from their unsightly appearance, skin tags were thought to have little clinical relevance. Skin tags have been observed with increased frequency in association with systemic disorders.

Several studies have shown its association with underlying systemic illnesses like Diabetes Mellitus,[2] Obesity,[3] renal disorders,[4] Colonic polyps,[5] Acromegaly[6] etc. The relevant literature does not contain enough data to confirm this relationship. Therefore this study was carried out to determine the clinical nature of Acrochordons; determine its association with any other systemic illnesses; and also to determine if skin tags can be used as a useful early warning sign of impending systemic illnesses.

MATERIALS AND METHODS: This was a hospital based, cross sectional type of study involving 50 patients attending the out – patient department of dermatology, venereology and leprology in Vydehi Institute of Medical Sciences and Research Centre, Bengaluru, India.

DOI: 10.14260/jemds/2015/931

Inclusion criteria:

1. Patients diagnosed to have skin tags.
2. Patients in the age group of 18 to 65 years.

Exclusion criteria:

1. Pregnant women.
2. Children below 18 years.

METHODOLOGY: Skin tags were defined as fleshy, pedunculated soft lesions, skin colored or darker hue that were 0.2cm – 1 cm in height and diameter. After signed informed consent, each participant was asked about details on age, gender, socioeconomic status, skin tags, history of concomitant medical illness, family history and medications, menstrual history, smoking, drinking and other addictive habits etc were recorded.

Patient was subjected to a thorough general physical examination. Height, Weight, Blood pressure and waist circumference was recorded.

Blood pressure was recorded as the average of two measurements after subject had been sitting for 5 min. Body mass index (BMI), was calculated as weight (kg)/height (cm^2). Patients were considered according to their BMI as BMI≤18 as thin, BMI between 19 and 25 as normal, BMI between 26 and 29 as overweight and BMI ≥30 as obese.

Any evidence of signs of conditions like diabetes, hypertension, Cardio vascular, renal, thyroid, gastrointestinal and other diseases were looked into and recorded.

Detailed cutaneous examination was carried out in each patient based on localization, number, size, shape, colour and other cutaneous lesions etc. and recorded.

Systemic examination of the patient was done with help of general physician and details were recorded.

All these patients were subjected to a baseline study of CBC, FBS & PPBS, and lipid profile and urine analysis.

Additional investigation like thyroid profile etc was done as and when required if any evidence of such illnesses was suspected on examination. Skin biopsy, was planned to be carried out only if necessary for doubtful diagnostic lesions was not carried on any of our patients.

Metabolic syndrome was diagnosed in the presence of three or more criteria of the National Cholesterol Education Program's Adult panel III.

(ATP III): waist circumference > 102 cm in men or >88 cm in women; hypertriglyceridaemia >1.7 mmol L^{-1}; high density lipoprotein (HDL) Cholesterol <1.0 mmol L^{-1} in men or <1.3 mmol L^{-1} in women; blood pressure>135/85 mmHg; fasting plasma glucose >6.1 mmol L^{-1}.

Venous samples were taken at the enrolment visit after the patients had fasted overnight (at least 8hrs). Serum cholesterol and triglycerides were measured with enzymatic procedures. Plasma glucose was measured using glucose oxidase method. Blood analysis was done using photometric methods, Beckman ACT series. Urine analysis was done using Urisys 2400, Benchtop urine analyzer photometer.

STATISTICAL ANALYSIS: All results were expressed as mean, standard deviation, frequencies (no of cases) and relative frequencies (percentages) when appropriate.

DOI: 10.14260/jemds/2015/931

The Statistical software namely SPSS 15.0 has been used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

OBSERVATIONS AND RESULTS: A total no. of 50 patients with skin tags were included in the study. The age of patients ranged from 18–65 yrs (mean 46.79±14.13 yrs), and the most common age groups were 58–68 (28%), 48–58 (28%), 38–28(20%), and 18–28(16%). [Table 1]

There were 27(54%) males and 23(46%) females; female - male ratio was 1:1.17 [Table 2].

There was a higher prevalence of skin tags in males (54%) in comparison with females (46%). [Graph 1]

In all 50 patients included in the study the position of skin tags was noted. 38(76%) patients were having skin tags over the neck, 34(68%) in the axillae, 21(42%) near the eyelids, 10(20%) in the groin region and 3(6%) in other sites. The other sites were back, inner aspect of shoulder, near the forehead [Table 3].

The number of skin tags among the 50 patients ranged from 1–74(19.38±16.59). 23(46%) of the patients were having skin tags in the range of 0–10, 8 (16%) in the range of 10 – 20, 11(22%) were having in the range of 20–30, 3(6%) in the range of 30–40, 1(2%) in the range of 40–50 and 2(4%)>50 [Graph 2].

In the study 92% of the patients had Skin tags measuring less than 1 cm, only 4 patients (8%) had giant skin tags measuring more than 1cm [Table 4].

Majority of skin tags were hyper pigmented (66%) and remaining (34%) skin tags were skin colored [Table 5].

FAMILY HISTORY: Out of 50 patients assessed 28(56%) were having family history of skin tags, 22(44%) of diabetes, 19(38%) of hypertension and 10(20%) of obesity.

Detailed cutaneous examination was done to determine the presence of other dermatological lesions. Acanthosis nigricans was found in 34(68%), Seborrheic keratosis in 13(26%), DPNs in 6(12%), eczema in 4(8%) and we had one patient with Psoriasis vulgaris (2%) [Table 6].

The mean BMI of the patients was 28.99±4.21. 40% of the patients were overweight (BMI between 26 and 29); 34% of the patients were obese and the rest 26% of the patient had normal BMI (between 19 and 25) [Table 7]. The mean Waist circumference was 99.12±5.76. 10(43%) of female patients (>88 cm), 14(51%) of male patients (>102 cm) had clinically significant waist circumference.

In the study about 44% of patients presented with skin tags in 2 sites, 32% in 3 sites, 20% in single site and 4% in 4 sites. The systemic illnesses were more commonly noted in patients with 2 or 3 sites involvement [Table 9]

The investigations carried on the patient were recorded and interpreted.

DISCUSSION: Skin tags are common benign lesions of the skin. The risk of getting skin tags increases with age. The age of 50, however, seems to be a turning point, at which a stagnation of the increase is observed. In our study there is more prevalence of skin tags among men than women. The majority of the carriers had no more than 3 tags per localization; the most frequent localization was the neck, followed by the axilla, eyelids, groin and others. 80% of our patients had lesions in more than one site. Our findings suggest that when multiple sites are involved chances of associated systemic

illnesses being present are more likely. There were no secondary changes noted in the skin tags of our patients.

Acanthosis nigricans is a hyper pigmented velvety plaque present symmetrically, most commonly in the axilla, groin and posterior neck. The hyper pigmentation observed is secondary to acanthosis and papillomatosis of the epidermis rather than pigment producing cells. The skin proliferation abnormalities in acanthosis are due to hyperinsulinemia and insulin resistance.[7] Hud et al[8] found that 74% of an obese patients had acanthosis nigricans along with elevated plasma insulin levels. Several studies have suggested Acanthosis nigricans to be a marker for metabolic syndrome. Our study also reveals that patients with skin tags who had Acanthosis nigricans had more evidence of other systemic illnesses, we postulate on this finding that skin tags can also be considered as a marker for metabolic syndrome. Recent data demonstrate a significantly higher prevalence of obesity among psoriasis patients than in the general population[9]. In our study only one patient had evidence of Psoriasis vulgaris.

The association between skin tags and obesity/ overweight has yielded mixed results in the past. Rasi A et al, in their study of 110 patients with skin tags revealed that 26.9 per cent were obese and 42 patients were overweight.[10] However kahana et al did not find an increased incidence with obesity but did report that those patients with Acrochordons had greater impairment of carbohydrate metabolism.[11] In our study we found that 74% of our patients with skin tags (40 & 34) were either obese or overweight. We therefore postulate that skin tags are an important marker for overweight and obesity.

24% of our patients fulfilled the criteria of metabolic syndrome as defined by the National Cholesterol Education Program's ATPIII.[12] In addition 10% had partial findings of metabolic syndrome. With these findings we postulate that skin tags could also be considered as a cutaneous marker for metabolic syndrome. However study involving a larger population will help bring more light on this subject.

In our study 36% of the patients were diabetics. Other studies have reported a much lower prevalence rate of diabetes mellitus in their patients with skin tags.[11] It is not surprising for our higher figures, considering that we have a higher prevalence of diabetes mellitus in our general population and also the fact that most of our patients also had other features of metabolic syndrome either completely or incompletely. We suggest that diabetes in many patients is occurring as complication of obesity evident by late onset of disease in many cases. Differences in genetic background, diet, levels of physical activity, population age and sex, levels of over and under nutrition, and body habits all influence the disease prevalence.

More than 50% of our patients had a positive family history of skin tags which is slightly more than the study done by Banik R et al.[13] In addition significant number of patients also had a positive family history of diabetes and hypertension. The findings suggest that there could be a genetic abnormality in the coexistence of these three diseases.

Our study failed to reveal any involvement of colonic disorders in our patients, although metabolic syndrome increases the risk of colon cancer mortality.[14] Lesser population studied and not focusing on investigation towards detection of colonic disorders could be a cause. However studies done earlier have also reported conflicting results.

4 of our patients had evidence of thyroid disorder. This is much higher when compared to prevalence of thyroid disorders in general population. 3 of the patients were hypothyroid and one

had hyperthyroidism, but there was no evidence of clinically significant nodules has suggested by the Rezzonico et al.[15]

The study was cross-sectional and therefore the directionality (whether skin tags occurred first or other illnesses preceded skin tags) of the association between skin tags and systemic illnesses could not be determined.

CONCLUSIONS: Skin tags are a common finding present more commonly after age of 40 yrs.

Presence of multiple, hyper pigmented skin tags at more than one site can be a marker for diabetes, obesity and metabolic syndrome. All such patients should be evaluated thoroughly for detecting such illnesses.

Skin tags can be early marker of increased risk of atherosclerosis and cardiovascular disease and helps in prevention of long term complications if diagnosed earlier.

Our study has got the limitations of having been done on a smaller population; we recommend study of similar type on a larger population to be made to corroborate our findings.

SUMMARY: Skin tags are a common benign lesions occurring in the general population. The patients were assessed clinically and investigations were carried out.

This study was intended to determine its association with various systemic illnesses. There is a significant association with diabetes, obesity and metabolic syndrome.

Patients with skin tags presented to the hospital should be thoroughly assessed and advised about the risk of systemic illnesses it could be associated with. Life style modification at early stage helps to prevent development of diseases or its long term associations.

REFERENCES:

1. Mackie RM. Epidermal skin tumors. In: Champion RH, Burton JL, Burns DA, Breathnach SM, ed. Textbook of Dermatology. Oxford Blackwell science, 1998: 1651 – 93.
2. Margolis J, Margolis LS. Skin tags: a frequent sign of diabetes mellitus. N Engl J Med 1976; 294 – 184.
3. Yosipovitch G, Devore A, Dawn A. Obesity and the skin: Skin physiology and skin manifestations of obesity. J Am Acad Dermatol 2007; 56 (6): 901 – 916.
4. Lally A, Casabonne D, Imko – Walczuk B, Newton R, Wojnarowska F. Prevalence of benign cutaneous disease among Oxford renal transplant recipients. J Eur Acad Dermatol Venereol 2010; 85 (1): 25 – 31.
5. Chobanin SJ, Van Ness MM, Winters C, et al. Skin tags as a marker for adenomatous polyps of the colon. Ann Int Med 1985; 103: 892 – 3.
6. Ben – Shlomo A, Melmed S. Skin manifestations in Acromegaly. Clinical Dermatol 2006; 24 (4): 256 – 9.
7. Geffner ME, Golde DW. Selective insulin action on skin, ovary, and heart in insulin-resistant states. Diabetes care 1988; 11: 500 – 505.
8. Hud JA, Cohen JB, Wagner JM, Cruz PD. Prevalence and significance of acanthosis nigricans in an adult obese population. Arch Dermatol 1992; 128: 941 – 944.
9. Herron MD, Hinckley M, Hoffman MS, Papenfuss J, Hansen CB, Callis KP, et al. Impact of obesity and smoking on psoriasis presentation and management. Arch Dermatol 2005; 141: 1527 – 1534.

DOI: 10.14260/jemds/2015/931

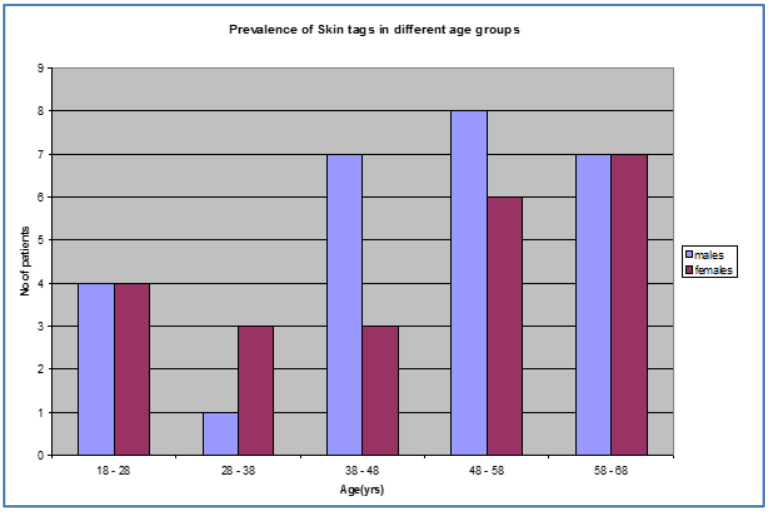
10. Rasi A, Soltani-Arabshahi R, Shahbazi N. Skin tag as a cutaneous marker for impaired carbohydrate metabolism: a case-control study. Intl J Dermatol 2007; 46: 1155 – 1159.
11. Kahana M, Grossman E, Feinstein A, et al. Skin tags: a cutaneous marker for diabetics. Acta Derm Venereol 1987; 67: 175 – 7.
12. National Institute of Health. Third report of the National Cholesterol Education Program Export Panel on Detection, Evaluation, and the Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). Executive summary. NIH Publ. no. 01-3670. Bethesda, MD: National Institute of Health, National Heart, Lung and Blood Institute, 2001.
13. Banik R, Lubach D. Skin tags: Localization and frequencies according to sex and age. Dermatologica 1987; 174: 180 – 183.
14. Cowey S, Hardy RW. The metabolic syndrome. A high risk state for cancer? Am J Pathol 2006; 169: 1505 – 22.
15. Rezzonico J, Rezzonico M, Pusiol E, Pitoia F, Niepomniszcze H. High prevalence of thyroid nodules in patients with acrochordons (skin tags). Possible role of insulin – resistance. Medicina (B Aires) 2009; 69 (3): 302 – 4.

Age (years)	No. of patients	Percentage
18 – 28	8	16
28 – 38	4	8
38 – 48	10	20
48 – 58	14	28
58 – 68	14	28

Table 1: Age distribution

Sex	No. of patients	Percentage
Male	27	54
Female	23	46

Table 2: Sex distribution

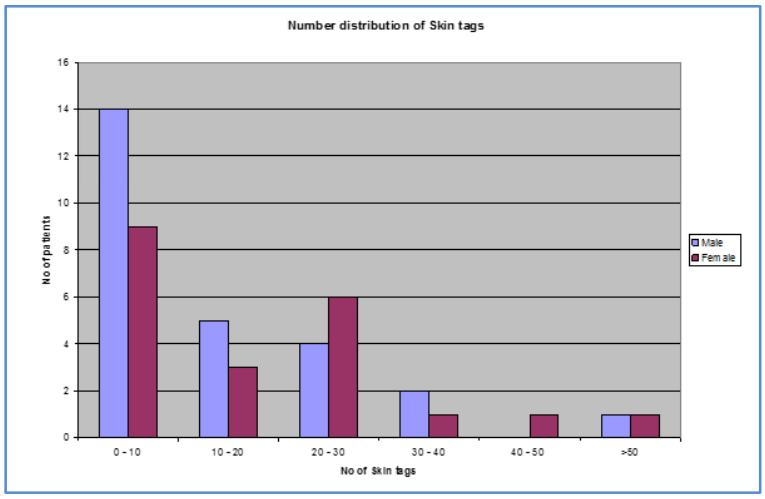


Graph 1: Prevalence of skin tags in different age groups

DOI: 10.14260/jemds/2015/931

Site	No. of patients		Percentage	
	Male	Female	Male	Female
Neck	20	18	74	78
Axilla	16	18	59	78
Eyelids	10	11	37	47
Groin	5	5	18	21
Others	2	1	7	4

Table 3: Site distribution



Graph 2: Number distribution of skin tag

Size (mm)	No. of patients	Percentage
0 – 5	23	46
5 – 10	23	46
>10 (Giant)	4	8

Table 4: Size distribution

Colour	No. of patients	Percentage
Hyper pigmented	33	66
Skin colored	17	34

Table 5: Colour of the skin tags

Lesions	No. of patients	Percentage
Acanthosis nigricans	34	68
Seboric keratosis	13	26
DPN	6	12
Eczema	4	8
Acne vulgaris	3	13
Psoriasis	1	2

Table 6: Other cutaneous lesions

DOI: 10.14260/jemds/2015/931

	BMI	WC
Females	29.66 ± 4.41	97.69 ± 4.56
Males	28.39 ± 4.02	110.74 ± 6.66

Table 7: BMI and WC

WC: Waist Circumference:

Diseases	No. of patients	Percentage
Hypertriglyceridaemia	24	46
Hypertension	20	40
Diabetes	18	36
Obesity	16	34
Metabolic syndrome	12	24
Hypercholesterolemia	10	20
Thyroid disorder	4	8
PCO	3	13

Table 8: Systemic diseases

PCO: Polycystic Ovary:

Sites	No. of patients	Diabetics	Hypertension	Obesity	Thyroid	PCO
4	2(4%)	1	1	1	0	0
3	16(32%)	8	8	5	0	2
2	22(44%)	9	10	7	2	0
1	10(20%)	0	1	3	2	1

Table 9: Association of site of skin tags with systemic illnesses

Number	No. of patients	Diabetes	Hypertension	Obesity	Thyroid	PCO
0 – 10	23(46%)	2	11	4	1	1
10 – 20	8(16%)	5	4	0	1	1
20 – 30	11(22%)	4	4	5	2	1
30 – 40	3(6%)	5	0	5	0	0
40 – 50	1(2%)	0	0	0	0	0
>50	2(4%)	2	1	2	0	0

Table 10: Association of number of skin tags with systemic illnesses

Investigations	
HB	13.46 ± 1.76
HCT	35.53 ± 7.37
FBS	118.77 ± 41.23
PPBS	171.24 ± 73.72
CHOL	180.95 ± 25.50
TG	171.53 ± 59.32
HDL	34.72 ± 7.33

Table 11: Investigations

DOI: 10.14260/jemds/2015/931

Fig. 1: Multiple skin tags around the eyelids

Fig. 2: Multiple skin tags around the eyelids

Fig. 3: Solitary skin tag in the axillae

Fig. 4: Multiple skin tags in the axillae

Fig. 5: Multiple skin tags in the neck

Fig. 6: Solitary skin tag in the groin

DOI: 10.14260/jemds/2015/931

Fig. 7: Giant skin tag in the axillae

AUTHORS:

1. Ramya N.
2. Bhanu Prakash
3. Sharath Kumar B. C.

PARTICULARS OF CONTRIBUTORS:

1. Post Graduate, Department of Dermatology, Kempegowda Institute of Medical Sciences.
2. Associate Professor, Department of Dermatology, Vyedehi Institute of Medical Sciences & Research Centre.
3. Professor, Department of Dermatology, Kempegowda Institute of Medical Sciences.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Ramya N,
2, "Sri Ganapa", 3rd Cross, 3rd Main,
Bhavani Layout, Banagiri Nagar,
Banashankari 3rd Stage, Bangalore-85.
E-mail: ramyamanag@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None

Date of Submission: 03/04/2015.
Date of Peer Review: 04/04/2015.
Date of Acceptance: 28/04/2015.
Date of Publishing: 05/05/2015.