

Clinical Evaluation of Acrochordons and its Association in Systemic Diseases

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ABSTRACT

Acrochordons (known as skin tags) are benign skin tumors. An Acrochordon is a small, soft, benign pedunculated growth that is found primarily in persons who have higher body mass index. It is the hyperpigmented elevation of the skin which appears above the skin surface as nodules or papilloma in healthy individuals. The common locations of Acrochordons are in the areas of skin folds in and around neck, eyes, and chest wall. The prevalence of Acrochordons is relatively high, found among 46% of the general population. The prevalence of acrochordons showed in our study was 21(14.0%). The clinical presentation of skin tags showed that majority of the skin tags presented as multiple lesions (57.1%) and was present in the neck and chest region (38.1%). Majority of the skin tags (61.9%) presented as small lesions measuring 2 mm in length. All the skin tags were hyperpigmented. The aim of this study is to clinically evaluate the pattern and presentation of acrochordons. This study was carried out as a cross sectional study among 150 participants visiting the outpatient clinic of the Department of Dermatology of our tertiary care hospital for a period of 7 months. A structured interview schedule was used to elicit data regarding the medical history. Clinical examination of skin tags was associated factors of acrochordons along with the prevalence of systemic diseases.

Keywords:

Acrochordons, Hyperpigmented, Nodules, Hyperpigmented, Benign Pedunculated.

1.Introduction

Acrochordons or skin tags, also referred to as soft fibromas is a commonly occurring benign skin lesion which consists of a small portion of the skin projecting from the surrounding skin. [1] The out pouches of the skin extend freely from the skin surface and are connected by a stalk. Skin tags present in a roughly 25% of the adults and is said to be familial. Skin tags are caused by friction between skin folds and or between skin and clothing. Skin tags are commonly seen in axilla, upper chest and beneath the breasts, neck, eye lids and groin folds. Skin tags are acrochordons are benign painless lesions, but manifest with symptoms when there is an abrasion or necrosis. Presence of red or black color in the skin tags could be a consequence of torsion in the base which results in cutting off of the blood supply. In such scenario excision may be the preferred treatment followed by cryosurgery with liquid nitrogen or electro-desiccation. [2]

There are several systemic infectious diseases and syndromes associated with skin tags. Skin tags are associated with conditions like pregnancy, intestinal polyps, growth disorders, metabolic syndromes, atherosclerosis and various other syndromes including polycystic ovarian syndrome, Birt–Hogg–Dubé syndrome, and Cowden syndrome. Some of the infections which correlate with skin tags include human papilloma virus, which is said to occur in 88% of the acrochordons lesions. Certain variations in the estrogen levels and hormones such as IGF-1, Insulin and Transforming Growth Factor (TGF) and Epidermal Growth Factor (EGF) are also implicated in the incidence of skin tags. [3]

The size of acrochordons varies between 2 to 5 millimeters in diameter and sometimes very big acrochordons can be up to 5 centimeters in diameter. Sometimes groin may also be affected. The clinical presentation of Acrochordons resembles the appearance of small, elevated, pedunculated skin colored or hyperpigmented painless papules that develop either as single or multiple lesions in the same site. [7] They are usually asymptomatic but sometimes due to fibrosis, necrosis or

secondary infections it can cause irritation and pain when exposed to mechanical trauma. In rare cases following skin rubbing or scratching, the skin tags may cause abrasion, hemorrhage and crust formation.

2. Materials and Methods

Study design

This study was carried out as a cross sectional study in a Teaching hospital. This study was undertaken in the outpatient Department of Dermatology in our Teaching hospital. This study was carried out for a period of seven months between October 2017 and April 2018. The study population consisted of all the patients who visited the outpatient department during the study period.

Sample size and sampling technique

Based on intensive literature review a report by Melissa. C Stoppler reported that 25% of the adults have skin tags. [35] Based on this the sample size was calculated at 95% confidence limits and a 7.5% absolute precision as 128. Allowing 10% for non-response the final sample size was calculated as 140.8 and was rounded off to 150. The participants were selected using purposive sampling amongst the patients who visited the outpatient clinic of our Dermatology Department.

Ethical approval and informed consent

Approval was obtained from the Institutional Ethics Committee prior to the commencement of the study. Each participant was explained in detail about the study and informed consent was obtained prior to the data collection.

Data collection tools

Selection criteria is based on inclusion criteria and exclusion criteria. A structured interview schedule was used to collect information regarding the Background characteristics and skin lesions. The interview schedule was divided into Demographic history, Medical History, Clinical examination. Acrochordons were clinically examined and identified as small, hyperpigmented, pedunculated soft tissue extensions from the skin. [7]. Body mass index was classified as per WHO classification for Asians [36].

Data Analysis

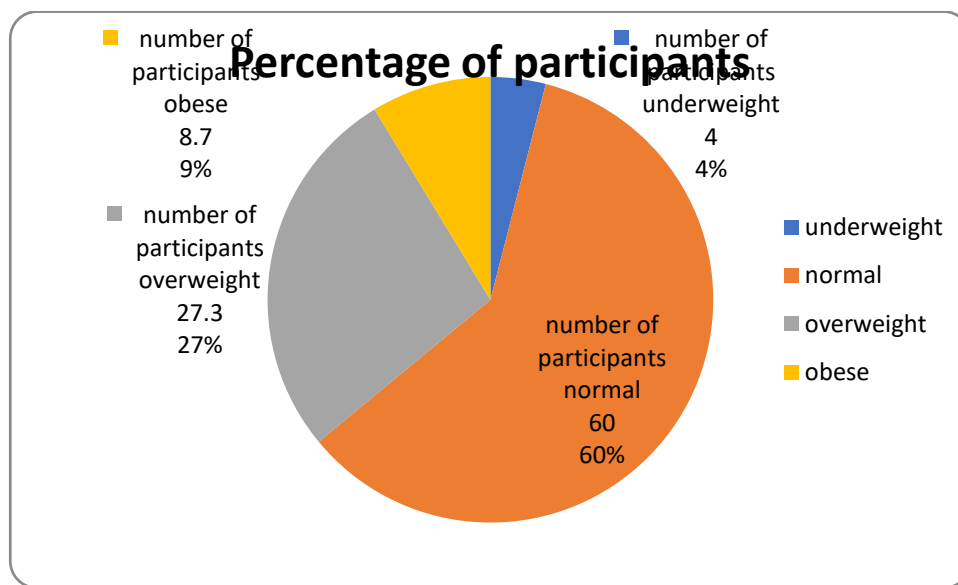
Data was entered and analyzed using SPSS version 15 software. Percentages were used to describe the prevalence of skin tags and systemic diseases. Chi – square was used to document the association between skin tags and systemic diseases. A p value less than 0.05 was considered to be statistically significant.

3.Results and Discussion

This cross-sectional study was carried out among 150 participants visiting the outpatient clinic of our department. The consent form was given to the patients prior to the interview. A structured interview schedule was used to elicit history regarding the medical conditions. Each participant was clinically examined for skin tags. Random blood sugar was estimated to assess the status of diabetic control.

Majority of the participants belonged to the age group of >40 years (75.3%). Males were about 104 (69.33%) while females were 46 (30.67%). The body mass index of the participants showed that majority of the participants were overweight (23.7%). (Figure1). The Random blood sugar levels were evaluated and it was observed that 66 (44.0%) of the participants had uncontrolled diabetes mellitus.

Figure-1: Distribution of the body mass index of the study participants:



The medical history of the study participants were elicited. It was observed that 26 (17.3%) of the participants had type 2 diabetes mellitus. Among these participants, majority (92.3%) of the participants had the disease for 3-5 years. Moreover, 27 (18.0%) of the participants had a history of hypertension of which 55.6% were known hypertensives for 3-5 years. History of hypercholesterolemia was present in 9 (6.0%) participants while history of endocrine disorders was present in 2 (1.3%) participants. (Table 1)

S. No	Characteristics	Frequency (N=150)	Percentage (%)
1	History of Type 2 Diabetes Mellitus		
	Present	26	17.3
	Absent	124	82.7
2	If present, duration (in years) (n=26)		
	≤2	2	7.7
	3-5	18	69.2
	>5	6	23.1
3	History of hypertension		
	Present	27	18.0
	Absent	123	82.0
4	If present, duration (in years) (n=27)		
	≤2	6	22.2
	3-5	15	55.6

	>5	6	22.2
5	History of hypercholesterolemia		
	Present	9	6.0
	Absent	141	94.0
6	If present duration (in years) (n=9)		
	≤2	1	11.1
	3-5	7	77.8
	>5	1	11.1
7	History of cardiovascular diseases		
	Present	4	2.7
	Absent	146	97.3
8	if present duration (in years) (n=4)		
	≤2	0	0.0
	3-5	4	100.0
	>5	0	0.0
9	History of cerebrovascular diseases		
	Present	0	0.0
	Absent	150	100.0
10	History of endocrine disorders		
	Present	2	1.3
	Absent	148	98.7
11	If present duration (in years) (n=2)		
	≤2	0	0.0
	3-5	1	50.0
	>5	1	50.0

Clinical presentation of acrochordons

The prevalence of acrochordons showed in our study was 14.0% [95% CI: 8.4 to 19.5]. Acrochordons was absent in 129 (86.0%) participants. (Table 1).

Table -2 Prevalence of acrochordons among the study participants

S. No	Acrochordon	Frequency (N=150)	Percentage (%)	95% CI
1	Present	21	14.0	8.4-19.5
2	Absent	129	86.0	80.44-91.55

The clinical presentation of skin tags showed that majority of the skin tags presented as multiple lesions (57.1%) and was present in the neck region (38.1%). Majority of the skin tags (61.9%) presented as small lesions measuring 2 mm in length. All the skin tags were hyperpigmented. (Table 2)

Table 3: Clinical presentation of acrochordons

S. No	Parameters	Frequency (N=21)	Percentage (%)
1	Number of skin tags		
	Multiple	12	57.1
	Single	9	42.9
2	Location		
	Axillae (arm)	1	4.8
	Chest	8	38.1
	Elbow	1	4.8
	Eyes	3	14.2
	Neck	8	38.1
3	Size (mm)		
	1	0	0.0
	2	13	61.9
	3	6	28.6
	4	2	9.5
4	Color		
	Hyperpigmented	21	100

I. Association between acrochordons and risk factors

The association between background risk factors and acrochordons show that males are at increased risk for acrochordons (16.3%). However, the observed difference was statistically not significant. Participants with overweight and obesity were at an increased risk for acrochordons (16.7% and 14.4% respectively) compared to participants with normal BMI. However, the observed difference was statistically not significant. Our study also showed that uncontrolled diabetes mellitus (RBS>200 mg/dl) was not significantly associated with acrochordons ($p<0.520$). (Table 4)

Table-4 : Association between skin tag and systemic diseases.

S. No.	Parameters	Acrochordons		N (150)	Chi sq	P value
		Present n (%)	Absent n(%)			
1	Age					
	<40	3 (8.1)	34 (91.9)	37	1.4	0.234
	>40	18 (15.9)	95 (84.1)	113		
2	Sex					
	Male	17 (16.34)	87 (83.65)	104	1.55	0.158
	Female	4 (8.69)	42(91.30)	46		
3	Body Mass Index					
	>30	1 (16.7)	5 (83.3)	6	4.6	0.203
	24-29.9	13 (14.4)	77 (85.6)	90		
	18.5-24	3 (7.3)	38 (92.7)	41		

	<18.5	4 (30.8)	9 (69.2)	13		
4	Random Blood Sugar					
	>200	20 (13.7)	126 (86.3)	146	0.4	0.520
	<200	1 (25.0)	3 (75.0)	4		

The association between history of medical conditions and presence of acrochordons shows that known history of cardiovascular diseases was a significant risk factor (75.0%) for acrochordons compared to participants without history of cardiovascular diseases (12.4%). The observed difference was found to be statistically significant ($p<0.05$). Moreover, history of hypertension was a significant factor for acrochordons. It was observed that participants with known history of hypertension were significantly associated with acrochordons (29.6%) compared to those with no history of hypertension (10.6%). The observed difference was found to be statistically significant ($p<0.05$). (Table 5)

Table -5 : Association between medical history and acrochordons:

S. No.	Parameters	Acrochordons		N (150)	Chi sq	P value
		Present n (%)	Absent n(%)			
1	History of cardiovascular diseases					
	Present	3 (75.0)	1 (25.0)	4	12.7	0.001*
	Absent	18 (12.3)	128 (87.7)	146		
2	History of hypertension					
	Present	8 (29.6)	19 (70.4)	27	6.6	0.010*
	Absent	13 (10.6)	110 (89.4)	123		
3	History of diabetes mellitus					
	Present	5 (19.2)	21 (80.8)	26	0.7	0.398
	Absent	16 (12.9)	108 (87.1)	124		
4	History of endocrine disorders					
	Present	0(0.0)	2 (100.0)	2	0.3	0.566
	Absent	21 (14.2)	127 (85.8)	148		

*statistically significant

This study was carried out as cross-sectional study among the patients visiting the outpatient Dermatology Department of our teaching hospital. The study was carried out among 150 participants. Majority of participants belong to the age group > 40 years (75.3%) and 16.34% were males. Among the participants, majority of them (60.0%) were normal weight. In a study done by Bhargava et al, majority of the participants belonged to the age group of 31 to 40 years and were females which was similar to our study. [24] In a study done by Shrestha P et al majority of the participants were females (54.9%) and they belonged to the age group over 55 years (37.5%) which is similar to our study.[37] In a study done by Tameka A. et al majority of the participants were females (74.5%) and the mean age of the participants was around 50 years which is similar to our study.[4] In another study done by Maluki et al the majority of the

participants in the study were females (68.63%) and the mean age of the participants was 38.6 years which is similar to our study.[38]

Our study assessed the Body Mass Index of the participants. Majority of the participants were found to be normal weight (60.0%) obesity was present in 8.7%. In the study done by Tameka et al obesity and overweight were significant findings in the study with a median Body Mass Index 31.1kg/m^2 among the cases and 26.1kg/m^2 among controls which is similar to our study.[4] In an another study Maluki et al the mean Body Mass Index was the 32.5kg/m^2 among the cases and 27.1kg/m^2 among the controls which is also similar to our study.[38]

Our study evaluated the presence of systemic risk factors among the study participants. It was observed that 26(17.3%) of the participants had type 2 diabetes mellitus. Among these participants, majority (92.3%) of the participants had the disease for 3-5 years. Moreover, 27 (18.0%) of the participants had a history of hypertension of which 55.6% were known hypertensives for 3-5 years. History of hypercholesterolemia was present in 9 (6.0%) participants while history of endocrine disorders was present in 2(1.3%) participants. The prevalence of uncontrolled diabetes mellitus was 15.3 % of the participants. In a study done by Tameka et al history of diabetes mellitus was present in 22.4% of the participants while family history of diabetes mellitus was present in 45.9% of the participants. The results were similar to the above study. [4] Hypercholesterolemia was present in 46.9% of the participants and mean the blood glucose level among the study participants was found to a 105.4mgs/dl . [4] In a study done by a Bhargava et al 20% of the participants had over diabetes mellitus while 8% of the participants had impaired glucose tolerance. Moreover 26% participants were found to be obese in the study. [24] In a comparative study done by Maluki et al the mean blood pressure among the mean systolic blood pressure among the cases was found to be 136.3 mmHg while family history of diabetes was a positive in about 98% of the cases and 8% of the controls. The mean fasting blood sugar level among the patients was ranging between 106.1 to 112.9 mmHg/ dl. [38]

The prevalence of acrochordons in our study was 14.0%. Multiple skin tags were present in 57.1% of the participants and majority of the skin tags were located in the neck and chest region (38.1%). All the skin tags were hyperpigmented (100%). The size of the skin tags varied from 1 to 4 mm and it was observed that majority of the participants had a size of 2 mm (61.9%). A study done by EL Safouri et al the prevalence of skin tags of 59.3% which was higher than our study. In 21.1% of the participants with skin tags the color of the skin tags was hyperpigmented.[20] In a study done by Zawahry et al the site of presentation of skin tags reveal that the majority of the skin tags were present in the neck region (60%) followed by axilla and chest which is similar to our study results.[39] In a study done by Mustafa et al majority of the lesions were present beyond one site, which is similar to our study. In this study it was observed that majority of the participants had skin tags in the neck region (15%) followed by on the face (15%) majority of the patients (65%) of the skin tags were very small in size, which was similar to our study. Majority of the participants had a hyper pigmented skin tag (63.3%) which was similar to our study. [40]

In our study one of the objectives was to evaluate the association of acrochordons and the risk factors. The association between demographic risk factors and the skin tags was carried out and it was observed that male participants were at an increase the risk of having skin tags compared to female participants. However, the association was statistically non-significant. We also analyzed the evaluated the risk of Body Mass Index as a risk factor for acrochordon. It was observed that participants with overweight and obesity were at increased risk for developing skin tags compared to participant with normal Body Mass Index. However, the observed association was statistically non-significant. It was observed that fasting blood sugar levels $> 200\text{mg/dl}$ was a

significant risk factor for the development of skin tags the association was not statistically significant ($P > 0.005$) we also evaluated the association between skin tags and the presences of known history of diabetes mellitus or hypertension or cardiovascular diseases. It was observed that known history of cardiovascular diseases was a risk factor and it increased with prevalence of skin tags (75.0%) compared to patients without with, no history of cardiovascular diseases (12.3%). The observed difference was statistically significant ($p < 0.001$). Known history of hypertension was significantly associated with the occurrence of skin tags. Participants with known history of hypertension had increased the prevalence of skin tags (29.6%) compared to participants with no history of hypertension (10.6%) The association was found to be statistically significant ($p < 0.001$)

In a study done by El Safouri et al BMI was found to be a significant risk factor for skin tags ($p < 0.05$).[20] In other study done by El Zawahry et al diabetic status was significant risk factor for appearance of skin tags ($p < 0.001$), similar to the findings of our study.[39] In a study done by Maluki et al BMI, Blood Pressure, and Metabolic Syndrome correlated significantly in the presence of skin tags ($p < 0.005$). The above findings were similar to findings of our study. [38]

Our study demonstrated the prevalence and association of skin tags with certain systemic conditions. Studies have demonstrated that multiple skin tags are often associated with insulin resistance and obesity. [41] Therefore obesity is a significant risk factor for skin tags. However, our study did not demonstrate any significant association between obesity and skin tags. The reason for this difference could be because of the innate characteristic differences in the participants who visited the outpatient department. However, our study demonstrates the significant relationship between history of cardiovascular diseases, hypercholesterolemia, and the presence of skin tags, which has been substantiated by several other studies.

4. Conclusion

This study was carried out to evaluate the clinical presentation and associated risk factors for acrochordons in a Teaching hospital. The prevalence of acrochordons in this study was 14% and majority of them presented as multiple lesions and around the neck. We also evaluated the medical history, diabetic status and body mass index among the participants. It was observed that history of diabetes mellitus, cardiovascular diseases and hypertension was significant risk factors for acrochordons. Our study demonstrated statistically significant results with uncontrolled diabetes mellitus.

Our study elucidated the clinical pattern of presentation of acrochordons and their potential risk factors of environment. While diabetes mellitus, hypertension and cardiovascular diseases were definitive risk factors of environment, our study could not demonstrate significant association between obesity and acrochordons. This could be because of the innate differences in the sampling characteristics present among the study participants. Overall our study has thrown light upon the risk factors and presentation of acrochordons. Although the cause and effect relationship could not be demonstrated due to the inbuilt bias in the study design, our study may be taken as the basis for using acrochordons as an effective screening tool for several non-communicable diseases like diabetes mellitus, hypertension, cardiovascular diseases and uncontrolled diabetes.

This study has a large implication in creating awareness regarding the predictive efficacy of skin tags. Any program targeting prevention of non-communicable diseases may be substantially strengthened by providing knowledge regarding the skin tags. Moreover, all medical professionals must be sensitized to detect the skin tags during routine clinical examination in order to predict the incidence and prevent the complications of non-communicable diseases.

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ANNEXURES

ANNEXURE I

SAMPLE SIZE CALCULATION

Sample size was calculated using formula

$$n = \frac{(1.96)^2 pq}{d^2}$$

$$n = \frac{3.84 \times 25 \times 75}{56.25}$$

$$n = 128$$

Where, n = number of sample required

p = prevalence = 25

q = 100 – p , 100 – 25 = 75

d = allowable error (7.5%)

Expecting a non response rate of 10% the total sample size was calculated

N = 140.8 Final sample size = 150

ANNEXURE II



BIHER, Chennai – TN]



Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,

PUDUCHERRY - 605 502.

[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]

[Affiliated to BIHER, Chennai – TN]

INSTITUTIONAL ETHICS COMMITTEE (HUMAN STUDIES)

NO. IEC/C-P/39/2017

Dated: 25.04.2017

CERTIFICATE

This is to certify that the project entitled "CLINICAL EVALUATION OF ACROCHORDONS AND ITS ASSOCIATED SYSTEMIC DISEASES", submitted by Dr. E. Malarmangai (P16MD063), Principal Investigator, Dr. K. Harsha Vardhan, has been approved by the Institutional ethics committee at its meeting held on 24.04.2017 with the following terms and conditions.

1. This approval is valid for three years or the duration of the project whichever is less
2. Any change, modification or deviation in the protocol, or any serious adverse event must be informed to Ethics Committee within fourteen days.
3. Any protocol modification or amendment must be informed with a fresh IEC approval
4. Investigator should conduct the study as per the recommended GCP / GLP guideline.

Chairperson
Dr.B.R.ASOKAN

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ANNEXURE III

CONSENT FORM

I am aware of the research work being conducted in Sri Lakshmi Narayana Medical College about **ACROCHORDONS** using minimally invasive technique by Dr. E. Malarangai. I am ready to participate in this study whole-heartedly. I am not being compelled in any way to be part of this study. I have been assured that by being part of this research I don't have to bear the excess expenses other than what is absolutely needed for diagnosing and treating my disease.

I have been given complete liberty to quit from this study at any point of time. I have been assured by the doctor that even if I quit from her study, I am entitled for complete treatment of my primary disease. Doctor has also promised me that my personal details will never be published without my permission.

I have read and understood the above things carefully and I am ready to be a part of this study whole-heartedly. I have been explained about the study in vernacular language.

Name of the investigator: Dr. E. Malarangai

Designation of the investigator: Post graduate in Dermatology

Signature of the investigator:

Patient's sign: