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Analysis of serum leptin levels in patient with skin tag



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ABSTRACT

Background: Skin tag is a benign tumor of the skin with papules, filiform or pedunculated clinical feature with soft consistency, skin-like to brownish colored and often arises in the flexure area. Etiopathogenesis of *skin tag* is still unclear, but one of the etiology is associated with leptin hormone. Increased levels of serum leptin level are expected to occur in patients with skin tag.

Aim: To determine the differences between serum leptin levels in skin tag patients and controls.

Material and methods: This study is an analytic study with a cross sectional design involving 33 subjects with *skin tag* and 33 healthy controls. Diagnosis of *skin tag* was made based on history and clinical examination, conducted blood sampling and measurement of serum leptin level to the patients and controls.

Results: In this study, we found the mean serum leptin levels of skin tag patients were highest on aged group 40-49 years (36.21 ± 10.03 ng/ml). The mean serum leptin level of female skin tag patients (36.98 ± 17.67 ng/ml) was higher compared to male (28.32 ± 12.04 ng/ml). The mean serum leptin level of skin tag patients with a family history (34.69 ± 12.77 ng/ml) was higher compared to patients without a family history (20.30 ± 8.63 ng/ml). The mean serum leptin level in the skin tag group (29.89 ± 13.34 ng/ml) was higher compared to the control group (22.53 ± 12.91 ng/ml) with $p = 0.034$.

Conclusion: There were significant differences in serum leptin levels between skin tag patients and control.

Keywords: skin tag, serum leptin level, impaired lipid metabolism

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INTRODUCTION

A skin tag is a papule-shaped benign skin tumor with soft consistency, skin-like to brownish colored, protruding or stemmed on the skin surface. Skin tags are often found in obese individuals, generally found in folds or areas that often experience friction.^{1,2} The prevalence of skin tags in the general population varies considerably with the occurrence of males and females generally the same and can occur in various age ranges.^{3,4}

The cause of skin tags is not known with certainty even though several factors are thought to have a role in the pathogenesis of skin tags. Until now there have been many theories explaining the pathogenesis of skin tags, including the process of repeated scratching or friction on the skin, hereditary factors in the family, hormonal factors, and obesity.⁵⁻⁷ Several studies also revealed that metabolic disorders of carbohydrates and insulin, as well as metabolic disorders of lipids and leptin hormone, play a role in the pathogenesis of skin tags.⁸⁻¹³

Leptin is an obese gene product that has the ability to stimulate growth factors, differentiation

and proliferation of epithelial cells in the dermis and epidermis.¹⁴ Binding of leptin and its receptors on the skin can trigger the proliferation and differentiation of keratinocyte and fibroblast cells and this is thought to play a role in the pathogenesis of skin tags.^{15,16}

The absence of definite aetiology for skin tag and the deficiency of studies on serum leptin in skin tag patients encourage further studies. Therefore, the present study aimed to determine the differences between serum leptin levels in skin tag patients and controls.

MATERIAL AND METHODS

This research was conducted from December 2017 to July 2018. This research was an analytic observational study with a cross-sectional design involving 33 skin tag patients and 33 controls aged 20-70 years in the Tumor and Skin Surgery Division of the Department of Dermatology and Venereology, Faculty of Medicine, Sumatera Utara University. Each subject of the study who had signed the informed consent was included in this

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Table 1 Distribution of research subjects based on gender

Gender	Skin tag patients		Control	
	n	(%)	n	(%)
Male	6	18.2	6	18.2
Female	27	81.8	27	81.8
Total	33	100	33	100

Table 2 Distribution of research subjects based on age

Age (years)	Skin tag patients		Control	
	n	(%)	n	(%)
20-29	0	0	0	0
30-39	10	30.3	10	30.3
40-49	18	54.5	18	54.5
50-59	4	12.1	4	12.1
60-69	1	3.0	1	3.0
70-79	0	0	0	0
Total	33	100	33	100

Table 3 Distribution of skin tag patients based on the history of skin tag

History of skin tag	n	(%)
Father	9	27.3
Mother	12	36.4
Father and Mother	1	3.0
None	11	33.3
Total	33	100

Table 4 Serum leptin levels based on age in skin tag patients

Charateristic		Serum leptin levels				
		Mean	Median	SD	Min	Max
Age (years)	20-29	-	-	-	-	-
	30-39	22.03	17.25	15.41	11.50	64.54
	40-49	36.21	36.49	10.03	18.13	62.41
	50-59	20.13	19.80	6.28	12.85	28.08
	60-69	-	-	-	-	-
	70-69	-	-	-	-	-

Table 5 Serum leptin levels based on gender in skin tag patients

Charateristic		Serum leptin levels				
		Mean	Median	SD	Min	Max
Gender	Male	28.32	29.17	12.04	11.50	62.41
	Female	36.98	37.10	17.67	12.85	64.54

study. Exclusion criteria are pregnant and lactating women, history of using insulin hormone and glucocorticoid drugs and diabetes mellitus.

Ethical permission is given by the Health Research Ethics Committee, Faculty of Medicine, Sumatera Utara University. For all study subjects, the history was taken, clinical examination and blood sampling for examination of serum leptin levels were carried out.

The results were analyzed statistically in the form of descriptive analysis, Kolmogorov-Smirnov normality test and Mann-Whitney test to determine differences between the two subject groups of the study where the value of $p < 0.05$ was considered as a significant result.

RESULT

Most research subjects in this study were women aged 40-49 years, and most skin tag patients had a history of skin tag in the family. The highest serum leptin levels in patients aged 40-49 years, women and have a family history of skin tags. Statistically, there were significant differences in serum leptin levels in the skin tag and control groups ($p = 0.034$).

DISCUSSION

Leptin is a product of the obese gene that can stimulate growth factors, differentiation and proliferation of epithelial cells in the dermis and epidermis.¹⁴ Several studies explain the effect of leptin in the pathogenesis of skin tags. Goren et al. were found the effect of leptin on keratinocyte proliferation in humans and rats.¹⁷ Frank et al. were found the effect of leptin on cutaneous keratinocyte proliferation in rats.¹⁸ Sallmeyer et al. were found the effect of leptin as a keratinocytic mitogen in the process of skin regeneration.¹⁹ Auwex et al. were found that leptin can stimulate the proliferation of various cells so that it is considered the latest growth factor.²⁰

In this study it was found that the mean serum leptin levels in the skin tag group, i.e. 29.89 ± 13.34 ng/ml, higher than in the control group of 22.53 ± 12.91 ng/ml, so it can be concluded that there is a significant difference in leptin levels between the skin tag and control groups ($p = 0.034$). This result is consistent with the study of El Safoury et al. that found the mean serum leptin level in the skin tag group of 43.2 ± 5.72 ng/ml was higher than in the control group of 28.5 ± 6.23 ng / ml with statistically significant results at the significance level of $p < 0.001$.⁶ Furthermore, research conducted by Erkek et al. was found that the mean serum leptin levels in the skin tag group of 12.2 ± 4.7 ng/ml were higher than in the control group of $5.5 \pm$

Table 6 Serum leptin levels based on the history of skin tag

Characteristic		Serum leptin levels				
		Mean	Median	SD	Min	Max
History of skin tag Keluarga	Present	34.69	33.06	12.79	15.90	64.54
	None	20.30	17.51	8.63	11.50	40.54

Table 7 Comparison of serum leptin levels between skin tag group and control group

Charateristic		Mean	Median	SD	Min	Max	p value
Group	<i>Skin tag</i>	29.89	29.80	13.34	11.50	64.54	0.034*
	Control	22.53	20.94	12.91	4.35	46.47	

* Statistically significant at $p < 0.05$

5.2 ng/ml with $p = 0.003$.¹⁶ Then in the study of Naglaa F. et al. it was found that the mean serum leptin levels in the skin tag group of 148.49 ± 95.61 ng/ml was significantly higher than in control group of 26.83 ± 11.43 ng/ml with the value of $p < 0.001$.²¹ Furthermore, the research conducted by Gautama was found that serum leptin levels in the skin tag group of 21.5 ± 16.9 ng/ml higher than in the control group of 4.6 ± 2.2 ng/ml with a mean difference of 16.9 which is statistically significant.²²

Leptin is a proteohormone that has the ability to stimulate growth factors, differentiation and proliferation of epithelial cells in the dermis and epidermis.¹⁴ The binding of leptin and its receptors in the skin can trigger the proliferation and differentiation of keratinocyte and fibroblast cells and this is thought to play a role in the pathogenesis of skin tags.^{15,16}

CONCLUSION

There were significant differences in leptin levels between skin tag and control groups. Further studies are needed in the form of multicenter research with more varied research subjects.

DISCLOSURE

The author reports no conflict of interest in this work.

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