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Correlation between Serum Leptin Level with Type and Number of Lesion Skin Tag

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Keywords: Skin tag; Serum leptin level; Type and number of skin tag

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Abstract

BACKGROUND: Skin tag is a benign tumour of connective tissue in the skin, sessile or pedunculated, skin-like to brownish coloured and often arises in the flexure area. Etiopathogenesis of skin tag is still unclear, but one of the aetiology is associated with leptin hormone.

AIM: To determine the correlation between leptin serum level with type and number of the lesion skin tag.

METHODS: This study is an observational analytic study with a cross-sectional design involving 33 skin tag patients. Diagnosis of skin tag was based on history and clinical examination; we conducted blood sampling and measurement of serum leptin level to the patients.

RESULTS: We found the mean serum leptin level of skin tag patients were highest on the type of lesion mixed (31.54 ± 12.85 ng/ml). The mean number of skin tag lesions was 13.6 ± 5.8 lesions. There is a very high positive correlation between serum leptin level with a number of skin tag ($r = 0.86$) with $p < 0.05$ and significant correlation between serum leptin level with the type of lesions ($p = 0.037$).

CONCLUSION: Serum leptin level has a very high positive correlation to a number of skin tag and significant correlation between serum leptin level with the type of lesion.

Introduction

A skin tag is a papule-shaped benign skin tumour with soft consistency, skin-like to brownish coloured, protruding on the skin surface. The prevalence of skin tag in the general population varies considerably with the occurrence of males and females generally the same and can occur in various age ranges [1], [2].

The cause of skin tag is not known with certainty even though several factors are thought to have a role in the pathogenesis of skin tag. Until now there have been many theories explaining the pathogenesis of skin tag, including the process of repeated scratching or friction on the skin, hereditary factors in the family, hormonal factors, and obesity [3], [4], [5]. Also 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 tag [6], [7], [8], [9], [10].

Leptin is an obese gene product that can stimulate growth factors, differentiation and proliferation of epithelial cells in the dermis and epidermis [11]. 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 tag [12], [13].

Methods

This research was an analytic observational study with a cross-sectional design involving 33 skin tag patients aged 20-70 years in the Tumor and Skin Surgery Division of the Department of Dermatology and Venereology, Faculty of Medicine, Universitas Sumatera Utara Medan. Each subject of the study who had signed the informed consent was included in this 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 Universitas Sumatera Utara Medan. In all study subject, we conducted blood sampling and measurement of serum leptin level to the patients. The result was analysed statistically by Spearman correlation test to investigate the relationship between the level of serum leptin with a number of skin tag and analysed statistically by Mann Whitney to investigate the relationship between the level of serum leptin with the type of skin tag.

Results

Characteristic of skin tag lesion in this study showed majority type of lesion is the mixed type (54.5%) (Table 1), 28 (84.8%) subjects had a multiple lesion (Table 2).

Table 1: Distribution of skin tag patients based on the type of lesion

Type of lesion	n	(%)
Pedunculated	8	24.2
Non pedunculated	7	21.2
Mixed	18	54.5
Total	33	100

In this study, we found the mean serum leptin level of skin tag patients were highest on the type of lesion mixed (31.54 ± 12.85 ng/ml). The mean number of skin tag was 13.6 ± 5.8 lesions.

Table 2: Distribution of skin tag patients based on the number of lesions

Number lesions	n	(%)
Multiple	28	84.8
Single	5	15.1
Total	33	100

There is a very high positive correlation between serum leptin level with a number of skin tag ($r = 0.86$) with $p < 0.05$ and significant correlation between serum leptin level with the type of lesions ($p = 0.037$). Statistically, there is a very high positive correlation ($r = 0.86$) between serum leptin levels and a number of skin tag with $p < 0.05$ (Table 3).

Table 3: Correlation between serum leptin level with the type of lesion skin tag

	Serum leptin level (ng/ml)			
Type of lesion	n	Mean	SD	p
Pedunculated	8	21.22	11.37	
Non-pedunculated	7	20.98	9.64	
Mixed	18	31.54	12.85	0.037

Discussion

In this study the majority of skin tag patients had mixed type of skin tag lesions 18 subjects (54%), and there is a significant correlation between serum leptin level with type of lesions ($p = 0.037$), authors have not found a literature discussing the correlation between serum leptin level with type of lesions but in study by Jusuf et al., found there was majority type of lesion is mixed type (56.2%) [2]. Based on a number of skin tag the majority of skin tag patients had multiple lesions. The results of this study according with the study conducted by Jusuf et al., who found 28 subjects (87.5%) had a multiple lesion [2]. The number of skin tag is associated with lipid metabolic disorders, one of which is affected by leptin [14].

Leptin is a product of the obese gene which can stimulate growth factors, differentiation, and proliferation of epithelial cells in the dermis and epidermis [11].

Statistically, there is a very high positive correlation ($r = 0.86$) between serum leptin levels and a number of skin tag with $p < 0.05$ and significant correlation between serum leptin level with the type of lesions ($p = 0.037$). The results of this study are by the research of Erkek et al., which found a correlation between serum leptin levels and a number of skin tag ($r = 0.62$) with $p < 0.001$ [13]. Gautama also obtained a positive correlation between serum leptin levels and with values of $r = 0.94$ and number of skin tag with $p < 0.001$ [15].

A strong correlation between serum leptin levels and the number of skin tag lesions is associated with a high mean body mass index in skin tag patients. A high body mass index is associated with a greater amount of lipid and then there is secreted a large amount of leptin that affects various organs including the skin. As a result of the presence of a high level of leptin and leptin ob R receptors on keratinocytes and fibroblasts cells can trigger cell proliferation and differentiation into skin tag lesions [12].

The conclusion in this study we investigated possitive correlation between serum leptin level with number of skin tag and significant correlation between serum leptin level with type of lesions very highly.

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