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Assessment of Serum Leptin among Patients with Skin Tag in Dr. Mohammad Hoesin General Hospital Palembang

Yuli Kurniawati[1], Mutia Devi[2], Khairani[3]

[1, 2, 3]Department of Dermatology and Venereology, Faculty of Medicine Sriwijaya University, Dr. Mohammad Hoesin General Hospital Palembang, Indonesia, +628127150511

Abstract: ***Aims: to describe the serum leptin levels of patients with skin tag. Materials & Methods: this is descriptive study which was conducted from October 2017 to February 2018 at the Tumor and Dermatosurgery outpatient Department of Dr. Mohammad Hoesin General Hospital Palembang. Sample study was obtained with cconsecutive sampling. A total of 40 patients with skin tag who met the inclusion criteria were included in the study. Demographic data, body mass index (BMI), and serum leptin were measured. Result: elevated serum leptin (42.5%) and obesity (62.5%) were observed among patients with skin tag. Majority patient with increase serum leptin (88%) is patient with multiple skin tag. Conclusion: almost half patients with skin tag had elevated serum leptin levels. Majority patient with increase serum leptin is patient with multiple skin tag. The higher levels of leptin in skin tag patients may be implicated in the development of skin tag.***

Keywords: skin tag, obesity, serum leptin

1. Introduction

Skin tag is a common benign lesion composed of loose fibrous tissue and occuring mainly on the neck and major flexures as a small soft pedunculated protrusion.[1,2] Skin tag remains asymptomatic unless they become inflamed or irritated.[3] The incidence of skin tag is more common in adult to old age.[1] The etiology of skin tag is still unknown.[3] Several factors such as family history, pregnancy, impaired glucose metabolism, obesity, and friction were associated with skin tag.[4,5] Skin tag may associated with increase adipose deposition.[6] Elevated fat mass can lead to increased leptin levels..[7-10] Leptin is a 16Kda protein, is a product of obese gene (Ob), produced by adipocyte including those of subcutaneous tissue. It is involved in the regulation of appetite and energy expenditure.[5] Obese individual who present with skin tag is frequently associated with elevated serum leptin levels. The mechanism of skin tag formation is through the activation of leptin receptor in the dermis and epidermis which stimulate the differentiation and proliferation of keratinocytes and fibroblast.[8,10,11] Several study suggested there is an association between serum leptin and skin tag, however other study were still different result.[7,8,12] Hence, researcher are interested to analysed the serum leptin of patients with skin tag in Dr Mohammad Hoesin General Hospital Palembang.

2. Methods

This is a descriptive study which was conducted from October 2017 to February 2018 at the Tumor and Dermatosurgery outpatient Department of Dr Mohammad Hoesin General Hospital Palembang. The study was approved by the ethics committee. Sample study was obtained with consecutive sampling. The inclusion criteria was patient of age 26–70 years old with skin tag at any location who agree to participate in the study. Exclusion criteria was diagnosed patients with secondary dyslipidemia such as diabetes melitus, nephrotic syndrome, chronic renal insufficiency, liver disease, thyroid dysfunction and Cushing's disease; who received hormonal contraceptive pills, systemic corticosteroid, and anti-dyslipidemia; pregnant and lactating patients. A total of 40 patients with clinical diagnosis of skin tag were informed concent. Demographic data were collected and blood were drawn to measure the serum leptin levels. Classification of patients' BMI based on International Association for The Study of Obesity WHO 2000, in which underweight <18.5 kg/m^2, normal 18.5–22.9 kg/m^2, at risk 23-24.9 kg/m^2, obesity 1 25-29.9 kg/m^2, and obesity II ≥30 kg/m^2.[13]

3. Results

The majority age groups in this study were early erderly 30%. Female patients were higher than male patients with ratio 7:3. Multiple skin tag lesions were noted in 28 patients (70%) and solitary lesion was noted in 12 patients (30%) (**Table 1**).

Table 1. Demographic and skin tag characteristic of patients

Variable	n (%) (n= 36)
Age	
Early adult (26-35 years old)	11 (27.5)
Late adult (36-45 years old)	11 (27.5)
Early elderly (46-55 years old)	12 (30)
Late elderly (56-65 years old)	4 (10)
Very late elderly (>65 years old)	2 (5)
Gender	
Male	12 (30)
Female	28 (70)
Education	
Senior high school	9 (22.5)
Diploma-Doctor	31 (77.5)
Occupation	
Unemployment	6 (15)
Non-government/public	4 (10)
Government employee	25 (62.5)
Labor	5 (12.5)

Family history of skin tag	
Not present	27 (67.5)
Present	13 (32.5)
Body mass index	
Normal	8 (20)
At risk	7 (17.5)
Obesity 1	16 (40)
Obesity 2	9 (22.5)
Number of skin tag	
Solitary	12 (30)
Multiple	28 (70)
Location number of skin tag	
location	30 (75)
>1 location	10 (25)

In this study, 17 patients had elevated serum leptin (42.5%) dan 23 patients had normal range of serum leptin levels (57.5%) (**Figure 1**). Majority (88%) from total patient with increase serum leptin is patient with multiple skin tag that may be observe in **Figure 2**. Obese patients were 62.5%, in which obesity 1 40% and obesity 2 22.5%. The mean number of skin tag was 5 ± 4.23. The mean serum leptin level in study patients was 25429.6 ± 15977.25.

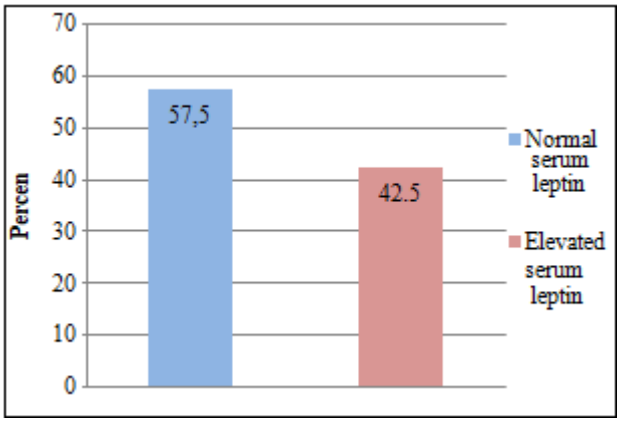

Figure 1. The distribution of category of serum leptin in patients

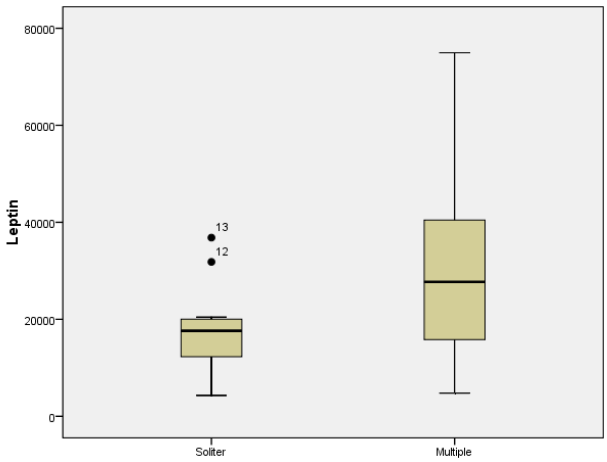

Figure 2: Box plot of the serum leptin based on number of skin tag

4. Discussion

One of the most common benign fibrous lesions of the skin is skin tag. Although it remains asymptomatic but most patients are not aware that skin tag may associated with obesity.[8] In the present study we found that 42.5% patients had elevated serum leptin and 62.5% obesity. Tosson Z et al found significant different serum leptin levels in 30 patients with skin tag in compare to the 20 control group.[5] Another study by Hegazy SK et al also supported a significant different serum leptin in 20 patients with skin tag in compare to the 10 control group.[14]

According to a study by Jusuf NK et al, there is plausible mechanisms that explain pathogenesis of skin tags in elevated fat mass caused increased level of leptin. Abnormal serum lipid profile may cause increase fat mass. The concentration of leptin is correlated with fat mass, obesity individuals often had elevated levels of leptin. Leptin is a growth hormone that suggests active in the process of proliferation and differentiation keratinocytes and fibroblast.[11] An in vivo study showed that leptin has an ability to induce proliferation of keratinocytes together with other growth factor.[10]

The limitation of this study, the study was done in a single centre with small sample size population.

5. Conclusion

Elevated serum leptin levels was found in almost half of patients with skin tag, Majority patient with increase serum leptin is patient with multiple skin tag. Future studies with multi center and larger sample size population were needed to further support the association serum leptin levels with skin tag.

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