CORRELATION BETWEEN OSTEOPONTIN WITH HS-CRP AND ADIPONECTIN IN PATIENTS WITH METABOLIC HEALTHY OBESE (MHO) AND METABOLIC UNHEALTHY OBESE (MUO)

CLINICAL CHEMISTRY

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Introduction

Obesity is associated with a variety of metabolic disorders triggered by the production of abnormal cytokines, increased acute phase reactions and other mediators, and activation of inflammatory signaling pathways[1]. In the previous study it was found that not all obese individuals had metabolic disorders[2]. Based on obesity can be divided in two categories, metabolic healthy obese (MHO) and metabolic unhealthy obese (MUO).

Obesity also triggers secretion of various adipokines like Adiponectin[3], Leptin, Resistin, Osteopontin[4], SAA3, Omentin, Visvatin, and RBP4[5].

Based on the literature review, studies on the correlation of osteopontin, hs-CRP and adiponectin on MHO and MUO subjects have never been done.

This study aims to analyze the relationship between hs-CRP, adiponectin (ADPN) and osteopontin (OPN) on the subject of Metabolic Healthy Obese (MHO) and Metabolic Unhealthy Obese (MUO)

Methods

Subject

- 70 obese men aged 30-50 years from several cities in Central Java.

Tests

- Phisics; body mass index, waist size, blood tension
- Lab; serum GPT, fasting glucose,HDL, Trigliceride, Creatinin, hs-CRP, Adiponectine, Osteopontin

Statistical Analysis

- Normality test used Shapiro-Wilk.
- Mann-Withney test was used to determine differences between group (MHO and MUO).
- Correlation test to define correlation between OPN, hs-CRP and ADPN used Spearman correlation

Serums were taken from the subject by first signing the informed consent that was approved by the Health Research Ethics Committee of Padjadjaran University number register 0417101087.

Resluts

Based on Caleyachetty criteria to define MHO and MUO[6], from the 70 obese men we obtained MHO and MUO subject were 34.29% and 65.71% respectively.

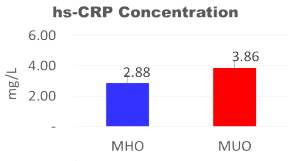

Figure 1. hc-CRP concentration on MHO and MUO

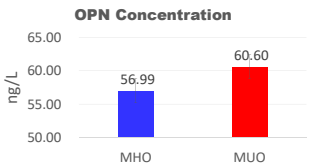

Figure 2. OPN concentration on MHO and MUO

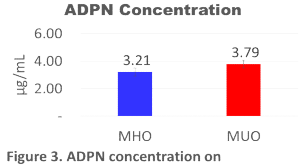

Figure 3. ADPN concentration on MHO and MUO

By using the Mann-Withney Test ($p < 0.05$) there were significant differences in the concentration of hs-CRP and OPN in the MHO and MUO groups, while ADPN concentrations did not show significant differences in the MHO and MUO groups.

Table 1. Difference analysis for all data

Variable	r	p
OPN – hsCRP	0,392	0,001
OPN – ADPN	0,093	0,442
ADPN – hsCRP	-0,141	0,243

Only the OPN parameter with hs-CRP has a correlation. While the OPN parameters with ADPN and ADPN with hs-CRP have no correlation

Table 2. Significant correlation between OPN and hs-CRP was shown in MHO subjects according to Caleyachetty criteria, although no correlation was found in the MUO subject group

Variable	MHO (n=24)		MUO (n=46)	
	r	p	r	p
OPN – hsCRP	**0,427**	**0,037**	0,237	0,113
OPN – ADPN	0,010	0,961	0,091	0,547
ADPN – hsCRP	-0,314	0,135	-0,117	0,438

Based on this study has shown a correlation between the concentration of hs-CRP and OPN. Increased CRP production is carefully regulated by TNF-α and IL-6. On the other hand, TNF-α and IL-6 suppress ADPN production by adipocytes. In obese subjects, adipose tissue inflammation occurs which triggers the secretion of TNF-α and IL-6, so there will be an increase in CRP concentration and a decrease in ADPN.

From the analysis used ROC curve, we obtained area under curve was 0.696 (69.6%). Cut off OPN concentration of 47.21 ng/ mL with a sensitivity of 97.22% and specificity of 20.59%.
This indicates that serum OPN concentrations below 47.21 ng/ mL have a risk of developing metabolic syndrome compared to serum OPN concentrations above 47.21 ng/ mL

Conclusions

There is a significant difference of hs-CRP and OPN concentrations on the subject of MHO Caleyachetty ($p < 0.05$).
On MHO subjects there is a correlation between OPN concentration with hs-CRP, $r = 0.427$, $p = 0.037$, whereas on MUO subject no correlation was found.
OPN can be used as an early marker of the development of MUO conditions on the subject of obese men

Acknowledgement

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