

# Effect of osteocalcin on fat distribution in premenopausal obese women

•Ozen Dedeoglu<sup>1</sup>, Guzin F. Yaylali<sup>2</sup>, Y. Tolga Yaylali<sup>3</sup>, Senay Topsakal<sup>2</sup>, Fulya Akin<sup>2</sup>, Duygu Herek<sup>4</sup>, Hande Senol<sup>5</sup>

<sup>1</sup>Department of Internal Medicine, Faculty of Medicine, Pamukkale University, Kinikli Campus, Denizli, 20070, Turkey

<sup>2</sup>Department of Endocrinology and Metabolism, Faculty of Medicine, Pamukkale University, Kinikli Campus, Denizli, 20070, Turkey

<sup>3</sup>Department of Cardiology, Faculty of Medicine, Pamukkale University, Kinikli Campus, Denizli, 20070, Turkey

<sup>4</sup>Department of Radiology, Faculty of Medicine, Pamukkale University, Kinikli Campus, Denizli, 20070, Turkey

<sup>5</sup>Department of Biostatistics, Faculty of Medicine, Pamukkale University, Kinikli Campus, Denizli, 20070, Turkey

## OBJECTIVES

Recent studies suggested that plasma levels of osteocalcin(OC) were negatively associated with both fat mass and plasma glucose. These findings may suggest that endocrine function of the osteoblast-derived osteocalcin on fat mass/glucose homeostasis in mice also might exist in humans. The aim of this study was to determine if osteocalcin has any effect on fat distribution in different parts of body.

## METHODS

86 obese premenopausal women (aged 17-55 years) and 56 women with normal BMI took part in this study. Anthropometric measurements including waist circumferences( WC) were done. Serum concentrations of fasting blood glucose, insulin, OC were measured. Body fat distribution was evaluated by ultrasonography. Body fat thickness in four regions were measured. Total fat and fat ratio were also measured by Bioelectrical Impedance Analysis (BIA). Epicardial fat thickness (EFT) was measured by echocardiography

|                                  | Obese | Control | P     |
|----------------------------------|-------|---------|-------|
| Visseral fat thickness (mm)      | 54,17 | 30,04   | 0,000 |
| Preperitoneal fat thickness (mm) | 20,36 | 6,72    | 0,000 |
| Subcutaneous fat thickness (mm)  | 34,38 | 18,59   | 0,000 |
| Epicardial fat thickness (mm)    | 5,19  | 3,25    | 0,000 |
| Osteocalcin (ml/min)             | 18,26 | 22,53   | 0,000 |

## RESULTS

Visceral (VFT), subcutaneous(SFT) and preperitoneal fat thickness(PFT) were significantly higher in obese subjects ( $p < 0.01$ ). OC was significantly lower in obese subjects. There wasn't any correlation between OC and VFT, SFT, PFT or EFT. Leg fat mass measured by BIA was negatively correlated with OC( $p=0,005, r=-0,328$ ).

## CONCLUSIONS

In a study conducted in 2015, the Chinese postmenopausal women, people with 31.5 % while the rate of increase KİMT, osteocalcin were significantly lower in this group.(1) In 2011, aged 13-18 in 58 obese total fat mass evaluated by DXA studies and the visceral adipose tissue was evaluated by CT. Osteocalcin was associated with a lower BMI and visceral adipose tissue.(2)Our study was contain only premenopausal women differently. While it does not find a relationship between osteocalcin and visceral adipose tissue, we found a negative correlation with fat legs were found at the same time we also positively correlated with PTH levels of osteocalcin. Again we evaluated the relationship between the EPF and OC. Unlike there wasn't any relationship EPF and OC.

## References

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2. Lenders CM, Lee PD, Feldman HA, Wilson DM, Abrams SH, Gitelman SE A Cross-sectional Study of Osteocalcin and Body Fat Measures Among Obese Adolescents *Obesity (Silver Spring)*. 2013 Apr; 21(4): 808-14

