RELATIONSHIP BETWEEN SERUM LEPTIN LEVELS AND BONE METABOLIC MARKERS IN PATIENTS ON HEMODIALYSIS

Anela Šubo[1], Nesina Avdagić[2], Amela Dervišević[2], Halima Resić[3], Alma Mutevelić-Turković[2], Almir Fajkić[4], Amila Hadžić[5]

[1]Department of Internal Medicine, General Hospital „Prim.dr Abdulah Nakaš“, Sarajevo, Bosnia and Herzegovina
[2]Department of Human Physiology, Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Clinic of Hemodialysis, University Clinical Centre, Sarajevo, Bosnia and Herzegovina
[4]Department of Patophysiology, Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[5]Department of Biochemistry, Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

OBJECTIVES

Leptin is a protein product which is secreted by adipose tissue (1). Bone metabolism disorders in patients on hemodialysis (HD) involve several humoral factors, of which intact parathyroid hormone (iPTH) plays the central role. Leptin is usually found increased in renal failure and its link with bone metabolism has not been completely clarified (2).

The aim of this study was to investigate the relationship between serum leptin levels and bone metabolic markers in HD patients according to their HD treatment duration.

METHODS

This cross-sectional study included 60 HD patients (34 male, 26 female) older than 18 years, whose mean age was 59.2±11.8 years. The patients were divided into two groups based on their HD treatment duration: HD duration from 3 to less than 60 months (HD<60 group,n=29) and HD treatment duration of 60 months and more (HD≥60 group, n=31). Blood samples were taken for iPTH, ferritin, bone alkaline phosphatase (BAP), calcium (Ca), magnesium (Mg), C-reactive protein (CRP), albumin and leptin. Serum leptin concentration was determined by an enzyme-linked immunosorbent assay (ELISA). Body mass index (BMI) of patients was calculated as weight (kg) divided by height squared (m^2).

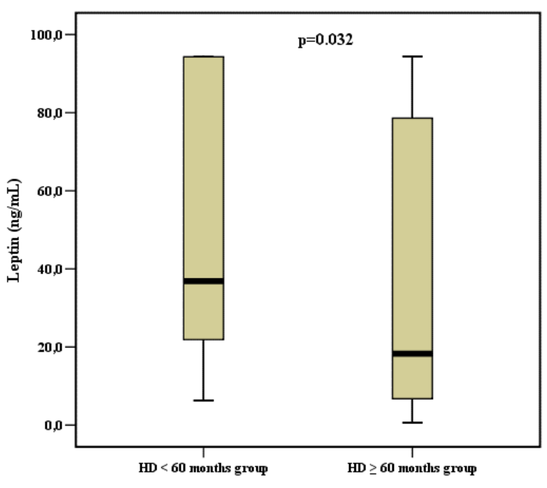

Figure 1. Serum leptin concentration in the HD<60 and HD ≥60 months group

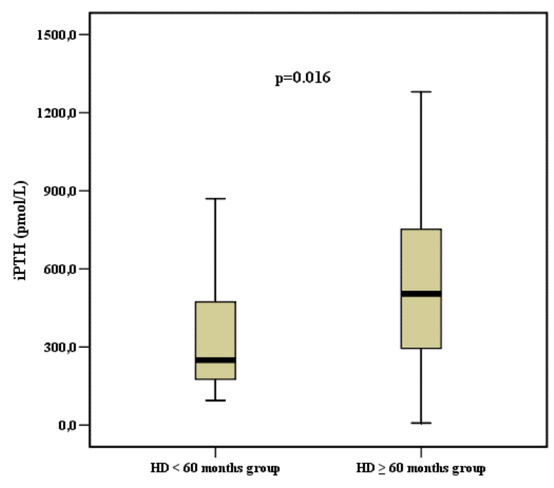

Figure 2. iPTH concentration in the HD<60 and HD≥60 months group

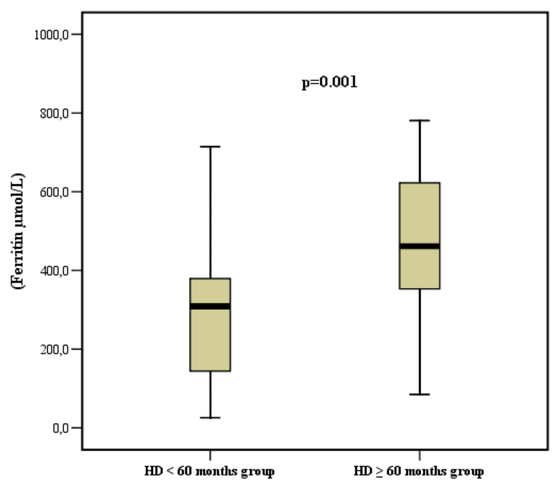

Figure 3. Ferritin concentration in HD<60 and HD≥60 months group

RESULTS

Serum leptin concentration was significantly higher (p=0.032) while iPTH (p=0.016) and ferritin (p=0.001) concentration were significantly lower in the HD<60 group compared to the HD≥60 group. Patients in the HD<60 group had higher values of BMI and higher serum concentrations of albumin, CRP, Ca and Mg and lower level of BAP compared to that in the HD≥60 group but the differences were not statistically significant. In the HD≥60 group we observed a statistically significant positive correlation between leptin and BMI (rho=0.718; p<0.0005) and a statistically significant negative correlation between leptin and ferritin (rho=-0.412, p=0.021). The correlation between leptin and other parameters in the observed groups of HD patients were not statistically significant.

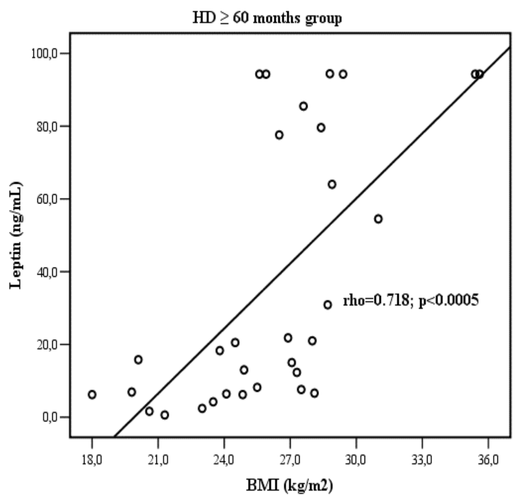

Figure 4. Correlation coeficient between serum leptin concentration and BMI

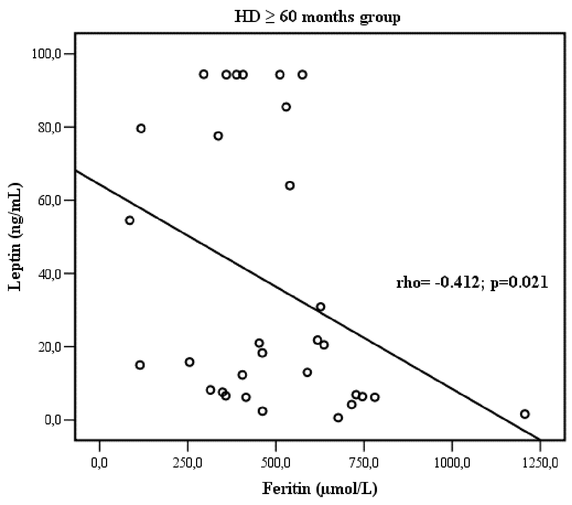

Figure5. Correlation coeficient between serum leptin concentration and ferritin

CONCLUSIONS

Obtained results demonstrate higher serum leptin concentration in patients who were on HD treatment from 3 to less than 60 months which, together with the higher BMI levels, indicate a better nutrition level of those patients compared to patients who are longer on HD. The serum leptin concentration can indicate nutritional status of HD patients which confirms also a positive correlation between serum leptin concentration and BMI values. Longer duration of HD and higher serum iPTH concentration may be risk factors for accelerated bone turnover in these patients. Thus, serum leptin concentration was not associated with parameters which indicate bone metabolism.

TOPIC: Dialysis- Bone disease

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