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The relationship between leptin serum concentrations and hypertension in patients on the end stage of renal disease

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Introduction & Aim: Leptin modifies the systemic inflammatory response and insulin action, but the mechanisms by which it affects vascular disease is unclear. We studied the relationship between leptin serum concentrations and hypertension in intermittent hemodialysis patients.

Methods: We studied 47 patients on on-line hemodiafiltration. Dialysis adequacy was defined by Kt/V for urea leptin and insulin was measured by radioimmunoassay. Insulin resistance was calculated using the homeostasis model assessment of insulin resistance (HOMA-IR). Serum bicarbonate levels were measured in gas machine. We recorded the blood pressure as the mean of 10 measurements during a treatment month. Kaplan-Meier curve and Cox regression model were performed to predict the role of leptin levels on established hypertension.

Results: Leptin serum concentrations were positively associated with insulin and BMI ($r=0.331$, $p=0.02$ and $r=0.453$, $p=0.001$ respectively). Kaplan-Meier analyses showed that leptin serum concentrations less than the mean value equal to 8.12 ng/ml were significantly associated with both, established hypertension and defined by serum bicarbonate less than 22 mmol/L metabolic acidosis state (log-rank=9.7, $p=0.002$ and log-rank=3.6, $p=0.04$ respectively). Cox-regression analysis showed that leptin was an inverse significant factor for existed hypertension after adjustment for covariates.

Conclusion: We observed inverse association between high leptin serum concentrations and hypertension in intermittent hemodialysis patients. The underlying pathophysiological mechanisms for such relationship may comprise the acquired higher leptin resistance, coexistence of normal body adiposity and corrected metabolic acidosis state.

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