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Adiponectin, a marker of malnutrition

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Introduction and Aim: Adiponectin (ADPN), adipokine produced by adipose tissue, circulates in several forms, one form of high molecular weight (HMW) is considered to be biologically active. Unlike leptin, ADPN concentrations are lower in obese and/or insulin-resistant patients. Bariatric surgery bypass provides a significant reduction in body fat, improved carbohydrate and lipid parameters and standardization of ADPN concentrations. The long-term surveillance of patients who underwent bariatric surgery has allowed us to observe that there was, in some cases, exaggerated ADPN elevations among patients who had malnutrition with significant hypoalbuminemia. In these circumstances, we quantified the total ADPN (TADPN) and HMW in subjects with hypoalbuminemia and we followed the evolution of ADPN in malnourished patients before and after refeeding.

Materials & Methods: 57 subjects (28 W, 29 M), hospitalized at Pitié-Salpêtrière with hypoalbuminemia were explored. These patients were classified into two groups depending on the concentration of serum albumin: Severe hypoalbuminemia <20 g/L (13 W, 22 M) and hypoalbuminemia 20 g/L≤AB≤30 g/L (15 W, 7 M). 36 healthy volunteers constitute the control population (20 W, 16 M). We followed 5 patients (4 W, 1 M) who presented hypoalbuminemia after bariatric surgery. The TADPN was assayed by ELISA (ALPCO) and HMW was quantitated by an automated assay (Fujirebio Lumipulse G1200).

Results: As in controls, the concentrations of TADPN and HMW are higher in women than men among patients with hypoalbuminemia. However, serum concentrations of HMW and TADPN were significantly higher in subjects with severe hypoalbuminemia whatsoever in men (p=0.0004) and in women (p=0.0003). We were able to demonstrate that there was an inverse correlation between hs-CRP and TADPN and HMW (p=0.0003 and 0.0002, respectively). Finally, by applying a partial correlation test (by fixing hs-CRP concentrations), there is a significant negative correlation between albumin and TADPN (p=0.013), albumin and HMW (p=0.015). Moreover, when hypoalbuminemia is corrected through therapeutic care, we see decreased TADPNT and HMW blood concentrations.

Conclusions: We show in this work that the values of TADPN and HMW exceed the usual values in patients with hypoalbuminemia but they must be interpreted according to hs-CRP. The concentrations of adiponectin return to normal after hypoalbuminemia correction. While the regulatory mechanisms are still unknown, we propose to evaluate the interest of TADPNT and HMW dosage as a nutritional marker by applying it to a larger population.

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