

## malnutrition of chronic

## renal failure

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## Abstract:

Malnutrition in uremic patients remains one of the major causes of morbidity and mortality. Its mediators remain largely unknown. Uremia is characterized by changes in circulating levels of catabolic cytokines and anabolic growth factors. The aim of this study was to investigate whether these changes are associated with the malnutrition of patients with chronic renal failure (CRF). We have studied the prevalence of malnutrition in a small group of patients (n = 20) with CRF (serum creatinine =  $551 \pm 105$  mumol/l, mean  $\pm 50$ ) and 25 age-matched controls. Nutritional status was assessed by dietary diaries, subjective global assessment (SGA), and by measurement of anthropometric parameters. Regression analysis was applied to examine the relationship between biochemical and anthropometric parameters. Simultaneously, we have investigated changes in the circulating levels of catabolic cytokines [tumor necrosis factor-alpha (TNF-alpha), interleukin (IL)-1 beta and IL-6] and an anabolic growth factor [insulin-like growth factor-I (IGF-I)]. We observed a high prevalence of malnutrition as judged initially by SGA: 50% moderately malnourished and 15% severely malnourished. This was confirmed by anthropometric measurements. We noted a significant reduction in both triceps skinfold thickness (TST; 35% of patients < 25th centile) and midarm muscle circumference (MAMC, 65% of patients < 25th centile). We also noted a reduction in serum IGF-I in malnourished patients (IGF-I in well-nourished patients = 207 + 48 micrograms/l, in malnourished patients =  $133 \pm 33$  micrograms/l, p < 0.01). IGF-I correlated with TST (r = 0.71, p < 0.001) and MAMC (r = 0.47, p < 0.05). IGF-I had a high predictive value for TST (R2 = 51%, p < 0.001). In contrast, TNF-alpha levels were higher in malnourished patients: 19.5 +/- 30 pg/ml compared to  $3.9 \pm - 8$  pg/ml in healthy patients (p < 0.001) and TNF-alpha showed a negative correlation with MAMC (r = -0.69, p < 0.01; R2 = 47%, p < 0.01). IL-1 beta levels were higher in CRF than in controls but did not correlate with nutritional parameters. No significant changes could be detected in serum IL-6. A significant percentage of predialysis patients with CRF suffer from some degree of malnutrition. This may be attributed in part to a fall in circulating anabolic growth factors and an increase in catabolic cytokines.