

## Carta al director

# Serum transferrin and serum prealbumin as markers of response to nutritional support in patients with esophageal cancer

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Protein-calorie malnutrition is diagnosed in up to 80% of the patients with esophageal cancer. Nutritional support may prevent or reverse malnutrition, and is associated with better response to cancer therapy. Serum proteins provide indirect information about visceral proteins levels. Their reduction indicates less hepatic synthesis, which is usually assigned to intake deficits. In malnourished patients with nutritional support, an increase in protein concentration will serve to document an anabolic response. As serum transferrin has a half-life of 8 days, and serum prealbumin, of 2 to 3 days, these proteins are affected earlier by acute

tus, patients underwent an anthropometric and biochemical evaluation. According to their nutritional status and degree of dysphagia, patients received nasogastric tube feeding alone, an oral diet or a combined diet (oral and nasogastric tube). Resting energy expenditure were calculated using the Harris-Benedict equation adjusted with an appropriate stress factor for cancer of 1,45. The caloric intake was provided with carbohydrate (55%), fat (25%) and protein (20%). Vitamins and minerals salts were calculated according to the Recommended Dietary Allowances (RDA, 1989). The nasogastric tube feeding had the

**Table I**  
Comparison of serum transferrin and serum prealbumin from pre-to-post nutritional support (NS)

Variables (normal value)	Pre-NS	Post-NS	Variation (95% CI)	p*
	Mean ± SD	Mean ± SD		
Transferrin (mg/dl) (200-400 mg/dl)	193.5 ± 48.7	215 ± 51.4	21.5 (11.9-31.1)	< 0.001
Prealbumin (mg/dl) (20-40 mg/dl)	17.4 ± 7.28	20.7 ± 6.54	3.27 (1.25-5.30)	0.002

\* *t* test for paired samples.

variations in protein balance and respond to nutritional support faster. Our objective was to assess serum transferrin and prealbumin levels as markers of response to nutritional support in patients with esophageal cancer.

This study evaluated hospitalized patients with esophageal cancer at surgery clinic of Hospital de Clínicas de Porto Alegre. To determine nutritional sta-

following characteristics: commercial polymeric formula with fibers and without saccharose or lactose. The consistency of the oral diet was adjusted to the degree of patient dysphagia. The patients received nutritional support before oncology therapy. Serum prealbumin and transferrin levels were measured before and after nutritional support.

From September/2006 to august/2007, 45 patients (mean age 60.96 ± 9.08 years) were assessed, 42 with epidermoid carcinoma and 3 with adenocarcinoma. Four patients received exclusive nasogastric tube, 11 received exclusive oral diet and 30 received combined diet (oral and nasogastric tube). Means nutritional duration support was 14 ± 4.72 days. There was a significant increase in serum transferrin ( $p < 0.001$ ) and prealbumin ( $p = 0.002$ ) levels after nutritional

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support, table I. There was a statistically significant association between transferrin and prealbumin variations from pre-to post nutritional support ( $r = 0.568$ ;  $p < 0.001$ ).

Assuming that protein-calorie malnutrition was the primary cause of the decreased protein concentrations in the study, provision of exogenous energy and proteins would invoke proteins synthesis. This significant increase after nutritional support may reflect an increase in the rate of protein synthesis. Clinically, the earliest detection of an anabolic response, or more importantly, a suboptimal response, provides information for the timely substitution of dietary nutrients, a measure that may avoid the deterioration of a patient's nutritional status.

In our study, serum transferrin and prealbumin levels seem to be sensitive parameters of the efficacy of

short-term nutritional support in patients with esophageal cancer.

## References

1. Rivadeneira DE, Evoy D, Fahey TJ, Lieberman MD, Daly JM. Nutritional support of the cancer patient. *CA Cancer J Clin* 1998; 48: 69-80.
2. Marín Caro MM, Laviano A, Pichard C, Gómez Candela C. Relación entre la intervención nutricional y la calidad de vida en el paciente con cáncer. *Nutr Hosp* 2007; 22 (3): 337-50.
3. Smith LC, Müllen JL. Nutritional assessment and indications for nutritional support. *Surg Clin North Am* 1991; 71 (3): 449-57.
4. Vanlandingham S, Spiekerman AM, Newmark SR. Prealbumin: a parameter of visceral protein levels during albumin infusion. *J Parenter Enteral Nutr* 1982; 6: 230-1.
5. Fuhrman MP, Charney P, Mueller CM. Hepatic Proteins and nutrition assessment. *J Am Diet Assoc* 2004; 104 (8): 1258-64.