Relation between cachexia, Patient-Generated Subjective Global Assessment and hand grip strength in patients with advanced cancer in palliative care unit in Brazil

Authors: Nathália Masiero Cavalcanti de Albuquerque[1,2], Juliana Rodrigues[1], Emanuelly Varea Maria Wiegert[1], Larissa Calixto-Lima[1], Livia Costa de Oliveira[1], Mayane Marinho Esteves Pereira[1], Wilza Arantes Ferreira Peres[2]

Institution: Palliative Care Unit, National Cancer Institute José Alencar Gomes da Silva (INCA), Rio de Janeiro, RJ, Brazil.[1]
Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro, RJ, Brazil.[2]

INTRODUCTION AND AIM

Cancer cachexia is a multifactorial and irreversible syndrome, frequently observed in advanced cancer patients characterized by metabolic and inflammatory disturbances that is associated with muscle mass loss and may also be with strength.

Therefore, we aimed to correlate cancer cachexia with Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF) and hand grip strength (HGS) in patients with palliative care.

METHODS

This is an observational study comprising 525 patients attended for the first time at Palliative Care Unit of the National Cancer Institute José Alencar Gomes da Silva (INCA) withdifferent locations of tumor.

Cachexia was defined by the criteria described for Fearon et al. (2011):

1) Weight loss > 2 % in 6 months + body mass index (BMI) < 20kg/m²; or
2) Weight loss > 2% in 6 months + Mid-upper arm muscle area (low muscle mass) < 32cm² for male and < 18cm² for female.

❖ Low muscle strength was characterized by HGS < 20kg for female and < 30kg for male.

❖Associations between clinical and nutritional parameters with cachexia were tested by univariate and multivariate regressions.

❖Cachexia was defined by association between the criteria 1 or 2 + presence of systemic inflammation (CRP <10) and low food intake (food less than usual in box 1 of PG-SGA)

RESULTS

A total of 525 patients with advanced cancer were studied, with mean age around the sixth decade of life, whose general characteristics are described in Table 1.

Table 1. Demographic, clinical and nutritional characteristics of the patients treated at a Palliative Care Unit in the city of Rio de Janeiro-Brazil (n=525)

Variables	n (%)
Age (years)*	63 (54; 72)
Female	302 (57.2)
Types of tumor	
Gastrointestinal tract	167 (31.8)
Ginecologic	95 (18.1)
Lung	61 (11.6)
Breast	54 (10.3)
Head and neck	53 (10.1)
Others	95 (18.1)
KPS 30-40%	260 (49.7)
Serum albumin < 3.5 mg/l	315 (62.5)
C-reactive protein ≥ 10 mg/dl	321 (68.2)
BMI < 20 kg/m² n (%)	196 (37.3)
Low HGS	
Female	228 (78.9)
Male	159 (74.0)
PG-SGA SF = 9 points	415 (79.0)
Cachexia	320 (61.0)

Note: n= number of observations; %= frequency; KPS= Karnofsky Performance Status.
BMI (Body Mass Index), HGS (Hand-Grip Strenght), PG-SGA SF (Patient-Generated Subjetive Global Assessment Short Form). *Median (IQR)

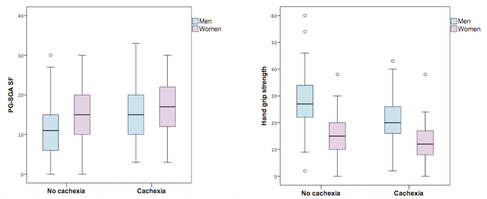

Figure 1. Box-plots of Patient-Generated Subjective Global Assessment Short Form (PG-SGA SF) and Handgrip Strength compared to cancer cachexia in patients treated at a Palliative Care Unit in the city of Rio de Janeiro-Brazil (n=525).

Note: PG-SGA por PG-SGA SF.: No cachexia ≠ Cachexia (Male, p-value <0.001; Female, p-value = 0.001).
Hand grip strength: No cachexia ≠ Cachexia (Male, p-value <0.001; Female, p-value = 0.003).

❖ In the univariate regression gastrintestinal tract tumor, CRP and albumin, HGS and PG-SGA SF (≥9) presented an elevated Odds Ratio (OR) for cachexia (p <0.02). In the multivariate analysis PG-SGA (≥9) presented the highest OR (2.43 [CI 95%: 1.52;3.90]) against gender, GI tract tumor, and HGS (Table 2).

Table 2. Factors associated with cachexia in patients with advanced cancer treated at a Palliative Care Unit in the city of Rio de Janeiro- Brazil (n=525).

	Bivariate		Multivariate	
Variables	**OR (CI 95%)**	**p-value[a]**	**OR (CI 95%)**	**p-value[a]**
Age ≥ 60 years	1.08 (0.76; 1.53)	0.667		
Female gender	0.33 (0.23; 0.48)	**<0.001**	0.29 (0.19; 0.43)	**<0.001**
Types of tumor (GI Tract)	2.17 (1.49; 3.16)	**<0.001**	1.82 (1.20; 2.76)	**0.004**
KPS (30-40%)	1.81 (1.27; 2.56)	**0.001**	1.55 (1.04; 2.32)	**0.030**
CRP (>10 mg/l)	1.42 (0.96; 2.10)	0.075		
Albumin (< 3,5 g/dl)	1.56 (1.08; 2.25)	**0.016**		
PG-SGA SF B+C	4.63 (2.76; 7.77)	**<0.001**	6.39 (3.65; 11.18)	**<0.001**
HGS	2.43 (1.57; 3.77)	**<0.001**		

Note: OR = odds Ratio; CI = confidence Interval; GI= gastrointestinal; KPS= Karnofsky Performance Status; CRP= C-reactive protein; PG-SGA-SF= abridged Patient-Generated Subjective Global Assessment; HGS = hand grip strength.
[a]P-value refers to bivariate logistic regression

CONCLUSION

Nutritional risk by PG-SGA SF, low muscle strength and Gastrointestinal tract tumor, but not KPS were associated with an increased odds to present cachexia.

Projeto Gráfico: Setor de Edição e Informação Técnico-Científica / INCA