

# Sarcopenia and frailty phenotype influence on quality of life of patients with bladder or kidney cancer

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## INTRODUCTION

Sarcopenia is a muscle disease that is defined by low levels of muscle strength, muscle quantity/quality and physical performance as an indicator of severity<sup>1</sup>. Frailty is characterized by cumulative decline in multiple body systems or functions<sup>2</sup>. Both increase the risk of adverse events such as physical disability, health related quality of life (HRQL) reduction and death. Sarcopenia and frailty are overlapping syndromes, and they are associated to diseases such as cancer<sup>1</sup>. The aim of this study was to evaluate the influence of sarcopenia and frailty phenotype on HRQL of bladder or kidney cancer patients.

## METHOD

Cross-sectional study with bladder or kidney cancer patients, aged <20 yo and enrolled in the Nacional Cancer Institute, Brazil. Clinical and nutritional data were collected from medical records and nutritional appointment. Sarcopenia was defined as low skeletal muscle mass <6.76 kg/m<sup>2</sup> for women and <10.76 kg/m<sup>2</sup> for male patients assessed by bioelectrical impedance analysis(BIA)<sup>3</sup>. Frailty was defined as the presence of 3 or more of the following criteria<sup>2</sup>: unintentional weight loss (≥ 5% of body weight in prior year), self-reported exhaustion, weakness (low handgrip strength), slowness (gait speed) and low physical activity (IPAQ questionnaire)<sup>4</sup>. HRQL was assessed using the EORTC QLQ-C30 questionnaire<sup>5</sup>. The SPSS program, version 20.0, was used for statistical analysis (Student T or Mann-Whitney test; ANOVA with Bonferroni pos-hoc test, X<sup>2</sup> test or Fisher's exact test). P-values <0.05 were considered statistically significant. The study was approved by the appropriate ethics committee (CAEE 54778216.7.0000.5274).

## RESULTS

40 patients were evaluated (50% bladder and 50% kidney cancer); mean age 62; 62.5% male; 62.5% sarcopenic; 25% frail and 52.5% pre-frail. There were no differences in nutritional parameters, performance and muscular strength, body composition, physical activity, and HRQL, according to tumor location. As HRQL was not different in sarcopenic compared to non-sarcopenic patients. However, a better HRQL was observed in robust compared to frail patients, in Global Health Status (84.2±18.8 vs 55.8±19.3; p=0.03); Role Function (100 vs 38.3±45.2; p<0.001); Physical Function (96.3±5.9 vs 52±30.3; p<0.001); Fatigue (2.9±4.9 vs 56.7±40; p=0.001); Pain (1.8±5.5 vs 78.3±33.4; p<0.001) and Appetite lost (3.7±11.1 vs 40±46.6; p=0.001).

Table 1. Demographic and Clinical Characteristics of Patients with Kidney or Bladder Cancer (n=40).

General Data		(%)	Disease Information		(%)
Age, years - Mean (SD)		62 (13)	Tumor	Clear Renal Cell Carcinoma	40
Sex	Male	62.5	Histological type	Low Grade Urothelial Carcinoma	15
	Female	37.5		High-Grade Urothelial Carcinoma	27.5
Smoking	Yes	25		Others	17.5
	No	75	Cancer Stage (n = 26)	Initial*	40
Alcoholism	Yes	25		Advanced**	25
	No	75	Presence of Metastasis	Yes	20
Comorbidities	Yes	62.5		No	80
	No	37.5	Time of Cancer	Pretreatment	27.5
Family History of Cancer	Yes	45		Ongoing Treatment	45
	No	55	Treatment	Post treatment	27.5

SD, standard deviation. \*Stages I e II; \*\*Stages III e IV.

Table 2. Nutritional Parameters, Muscular Strength, Body Composition and Physical Performance According to Tumor Location

Variables	Patients with kidney cancer (n=20)	Patients with bladder cancer (n=20)	p-value
Current Weight (Kg)	74,5 (57,9 – 108)	70,5 (49 - 93)	0,29
Usual Weight (Kg)	78 (58 – 115)	68,5 (53 – 92)	0,83
Height (m)	1,65 (±0,1)	1,65(±0,08)	0,75
BMI, kg/m <sup>2</sup>	26,7 (23,2 – 36,9)	26,45 (16,07 – 35,25)	0,30
Waist Circumference (cm)	97 (±10,2)	92,5 (±12,8)	0,26
SMM (Kg)	23,5 (±8,2)	22,8 (±6,9)	0,46
SMMI (Kg/m <sup>2</sup> )	8,6 (±2,2)	8,1 (±2)	0,50
Fase angle °	6,3 (5,3 – 8,4)	6,9 (4,1 – 14,2)	0,34
PG-SGA, score	3 (1 – 24)	2 (1 – 15)	0,10
Grip strength (Kg)	28 (17 – 48)	26 (14 – 48)	0,58
Gait speed (seconds)	4,3 (3,2 – 9,3)	4,4 (2,6 – 9,8)	1,0

BMI – body mass index; SMM – skeletal muscle mass; SMMI – skeletal muscle mass index; PG-SGA – Patient-Generated Subjective Global Assessment. P-value by Test T-student.

Table 3. Quality of Life and Frailty of Patients With Kidney or Bladder Cancer.

HRQL	Robust (n=9) Mean (±SD)	Pre-frail (n=21) Mean (±SD)	Frail (n=10) Mean (±SD)	p-value
Global Health Status	84,2(±18,8)*	71,03(±24,9)	55,8 (±19,3)*	0,031
Role Function	100 (0,0)*	82,5 (±26,6) #	38,3 (±45,2)* #	0,000
Physical Function	96,3 (±5,9)*	80,9 (±20,8)#	52 (±30,3)*#	0,000
Emotional Function	63,0 (±20)	65,08 (±33,4)	43,3 (±41,3)	0,23
Cognitive Function	85,2 (±15,5)	77,8 (±22,6)	78,3 (±28,4)	0,71
Social Function	92,6 (±12,1)	78,6 (±27,9)	73,3 (±33,5)	0,28
Fatigue	2,5 (±4,9)*	24,3 (±30,5) #	56,7 (±40)* #	0,001
Nausea/vomiting	0	1,6 (±7,3)	15 (±27,7)	0,044
Pain	1,8 (±5,5)*	26,2 (±33,6) #	78,3 (±33,4)* #	0,000
Dyspnea	0	7,9 (±23,3)	10 (±22,5)	0,53
Insomnia	22,2 (±23,6)	30,1 (±36,4)	60 (±41)	0,048
Appetite lost	3,7 (±11,1)*	1,6 (±7,3) #	40 (±46,6)* #	0,001
Constipation	7,4 (±22,2)	9,5 (±26,1)	23,2 (±35,3)	0,37
Diarrhea	3,7 (±11,1)	3,2 (±10)	6,6 (±21,1)	0,80
Financial Difficulties	14,8 (±24,2)	30,1 (±43,3)	23,3 (±41,7)	0,62

Notes: SD – Standard Deviation, HRQL– Health related Quality of life; p-value by ANOVA, \*Frail x Robust, #Frail x Pre-Frail.

## CONCLUSION

Frailty influenced a worse quality of life in bladder or kidney cancer patients, although sarcopenia has not exerted the same effect.

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