DIFFERENT METHODS FOR THE DIAGNOSIS OF SARCOPENIA AND ITS ASSOCIATION WITH SURVIVAL IN PATIENTS WITH ADVANCED CANCER IN PALLIATIVE CARE

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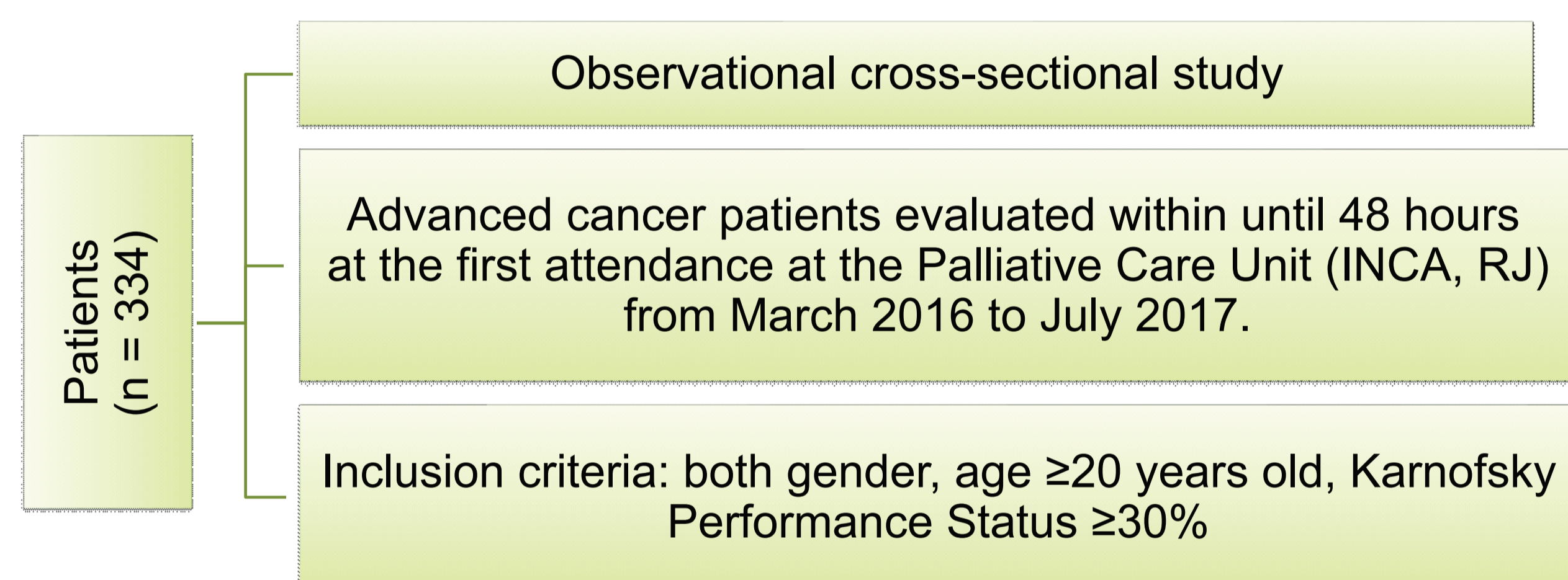
INTRODUCTION

Studies have shown that the presence of sarcopenia has been associated with decreased overall survival (OS).

AIM

To investigate the association of sarcopenia, according to different methods, and OS in patients with advanced cancer in palliative care.

METHODS

Patients (n = 334)

- Observational cross-sectional study
- Advanced cancer patients evaluated within until 48 hours at the first attendance at the Palliative Care Unit (INCA, RJ) from March 2016 to July 2017.
- Inclusion criteria: both gender, age ≥20 years old, Karnofsky Performance Status ≥30%

Sarcopenia: Low muscle mass and low strength.
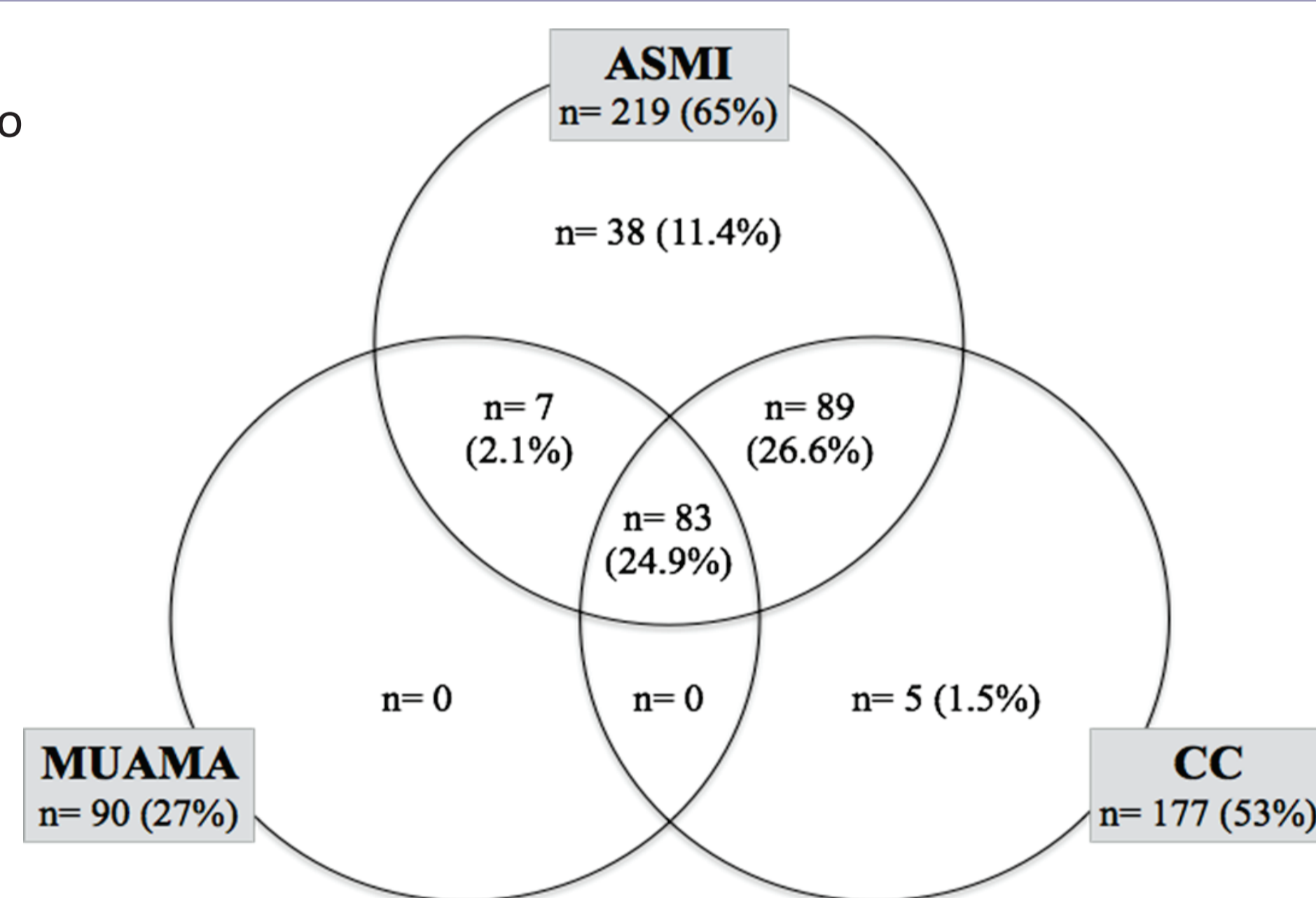
Low muscle mass was characterized when
- Appendicular skeletal muscle mass (ASMI) described by Baumgartner (1998) and adjusted for height: <7.26 kg/m2 for male and <5.45 kg/m² for female.
- Mid-upper arm muscle area (MUAMA): <32 cm2 for male and <18 cm2 for female.
- Calf circumference (CC): ≤34 cm for male and ≤33 cm for female.

Low muscle strength was defined by handgrip strength (HGS) <30 kg for male and <20 kg for female.

Overall survival: established based on a 90 days follow-up after inclusion date.

Statistical Analysis: SPSS software version 21.0.
- Agreement between methods was evaluated by the kappa;
- Kaplan-meier curves and log rank test were conducted for survival analyzes;
- Association between sarcopenia and OS was evaluated by Cox regression model.
- Statistical significance was set at p <0.05.

RESULTS

Table 1. Characteristics of the advanced cancer patients treated at a Palliative Care Unit in the city of Rio de Janeiro, Brazil (n=334).

Variables	
Age (years)[a]	63 (55; 72)
Age ≥60 years[b]	208 (62.3%)
Female gender[b]	183 (54.8%)
Types of tumor[b]	
GI tract	104 (31.1%)
Ginecologic	58 (17.4%)
Head and neck	43 (12.9%)
Lung	37 (11.1%)
Breast	29 (8.7%)
Others	63 (18.9%)
Distant metastasis[b]	222 (66.5%)
Comorbidities[b]	
SAH	87 (26.0%)
DM	32 (9.6%)
KPS (30-40%)[b]	115 (34.4%)
PG-SGA SF (global score)[a]	14 (8; 19)
PG-SGA (SF ≥9 points)[b]	255 (74.6%)
BMI (kg/m²)[c]	22.1 (±5.2)
BMI (<20kg/m²)[b]	129 (38.6%)
Albumin (g/dL)[a]	3.4 (2.9; 3.9)
Reduced muscle mass[b]	
ASMI (Kg/m²)	287 (89.9%)
MUAMA (cm²)	108 (32.3%)
CC (cm)	228 (68.3%)
Reduced HGS[b]	235 (70.4%)

Note: n= number of observations; %= frequency; GI = gastrointestinal; SAH= systemic arterial hypertension; DM= diabetes mellitus; KPS= Karnofsky Performance Status; PG-SGA SF= Patient-Generated Subjective Global Assessment Short Form; BMI= body mass index; ASMI = appendicular skeletal muscle mass index; MUAMA= mid-upper arm muscle area; CC= calf circumference; HGS = handgrip strength.
[a]Median/interquartile ranges (p25-p75).
[b]Number of observation/frequency
[c]Mean/standard deviation

Figure 1. Prevalence of sarcopenia according to three measurements of muscle mass in cancer patients treated at a Palliative Care Unit in the city of Rio de Janeiro, Brazil (n=334).
Note: n= number of observations; %= frequency; ASMI = appendicular skeletal muscle mass index; MUAMA= mid-upper arm muscle area; CC= calf circumference.
K: ASM vs MUAMA r= 0.325, p<0.001; ASM vs CC r= 0.683, p<0.001; MUAMA vs CC r= 0.411, p<0.001.
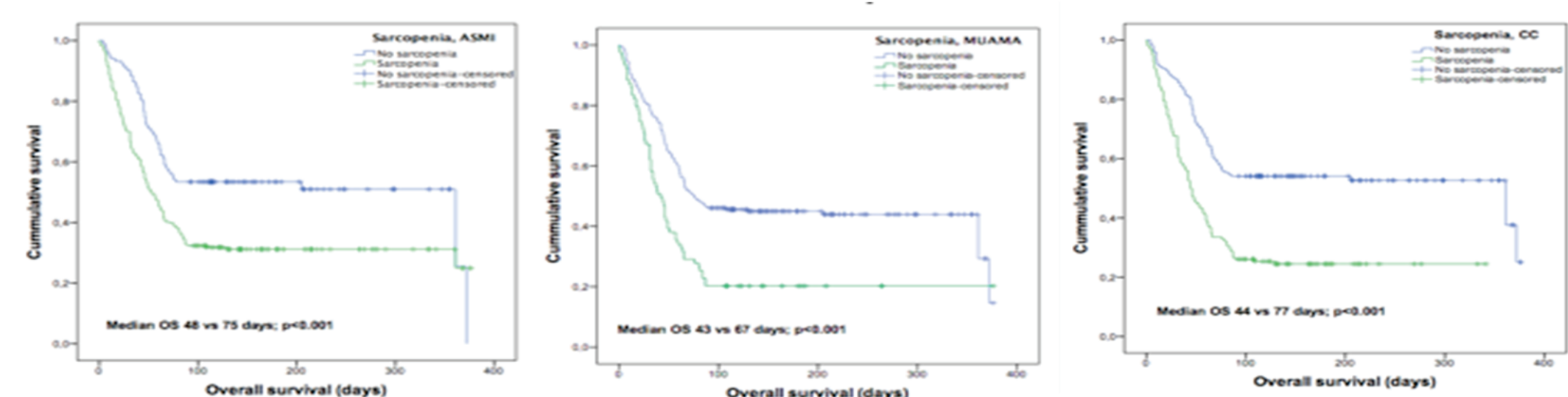
Figure 2. Comparison of survival curves among patients with sarcopenia and no sarcopenia by ASMI, MUAMA and CC, n= 334.
Note: ASMI = appendicular skeletal muscle mass index; MUAMA= mid-upper arm muscle area; CC= calf circumference; OS= overall survival.
* p-valor refers to log-rank test. c

Cox regression model* according sarcopenia evaluated by:
- MUAMA (HR= 1.57, 95% CI: 1.12-2.1, p= 0.007);
- CC (HR= 2.00, 95% CI: 1.45-2.76, p <0.001);
- ASMI (HR=1.34, 95% CI:0.94-1.92, p <0.060).

*adjusted for age>60 years; female gender; GI tract tumor; KPS 30-40%; PCR>10 mg/L and Patient-Generated Subjective Global Assessment Short Form >9.

CONCLUSION

Sarcopenia obtained by CC and MUAMA, two methods available in the clinical routine, can predict OS in patients with advanced cancer in palliative care.