

**Title:** Sarcobesity index is an independent prognostic factor after curative resection for colorectal cancer

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## **ABSTRACT**

**Background and aims:** Recently, the association of reduced muscle mass and increased visceral adiposity defined Sarcobesity (SO), has been reported to worsen prognosis after curative resection for colorectal cancer (CRC). The aim of this paper was to propose a new definition of SO based on Computed Tomography (CT) measures of Skeletal Muscle Area (SMA) and Visceral Adipose Tissue (VAT) and to assess its oncological implications after curative resection for stage I-III CRC.

**Methods:** Retrospective analysis of 506 stage I-III CRC patients undergone surgery between January 2010 and December 2019 was conducted. Pre-operative CT images were analysed, and Sarcobesity Index (SI) was calculated for each patient (VAT/SMA ratio). Overall survival (OS) and cancer-related survival (CRS) were compared between SO (SI>1.24) and Non-SO (SI<1.24) groups, and multivariate analysis was conducted.

**Results:** Three hundred patients (59.3%) were sarcobese. No differences in post-operative surgical outcomes were found except for a longer length of stay in the SO group. Sarcobesity was associated to a worse 5-year OS and CRS in the overall population and in stage II-III patients. Multivariate analysis confirmed SO as an independent risk factor for CRS (HR 2.29; 95% CI 1.13-4.62, p = 0.02) but not for OS.

**Conclusions:** Sarcobesity Index is a simple parameter which can be measured at pre-operative CT staging images. Sarcobesity, defined according to SI cut-offs, allows to identify those patients presenting a worse prognosis after potentially curative surgery for CRC. Sarcobesity Index should be considered for routine patients' stratification in the pre-operative and likely for the follow-up period.