

An investigation of the association between sarcopenia and post-operative morbidity and mortality in patients with gastric cancer

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Background

Gastric cancer is the fifth most common malignancy worldwide and comprises 6.8% of all cancer diagnosed. It is the third leading cause of cancer related deaths¹. Gastric cancer carries a poor overall 5 year survival rate of 19.5% (male) and 17.9% (female)². Post-operative complications have been reported to be as high as 39% in patients undergoing surgery with curative intent³. A number of recent studies have demonstrated an adverse association between sarcopenia and immediate and long term patient outcomes following surgery including; post-operative complications, length of hospital stay, recurrence-free and overall survival^{4,5}.

Aim

The aim of this retrospective study was to assess the prognostic significance of sarcopenia in patients undergoing curative resection for gastric adenocarcinoma with respect to post-operative morbidity, recurrence-free and overall survival.

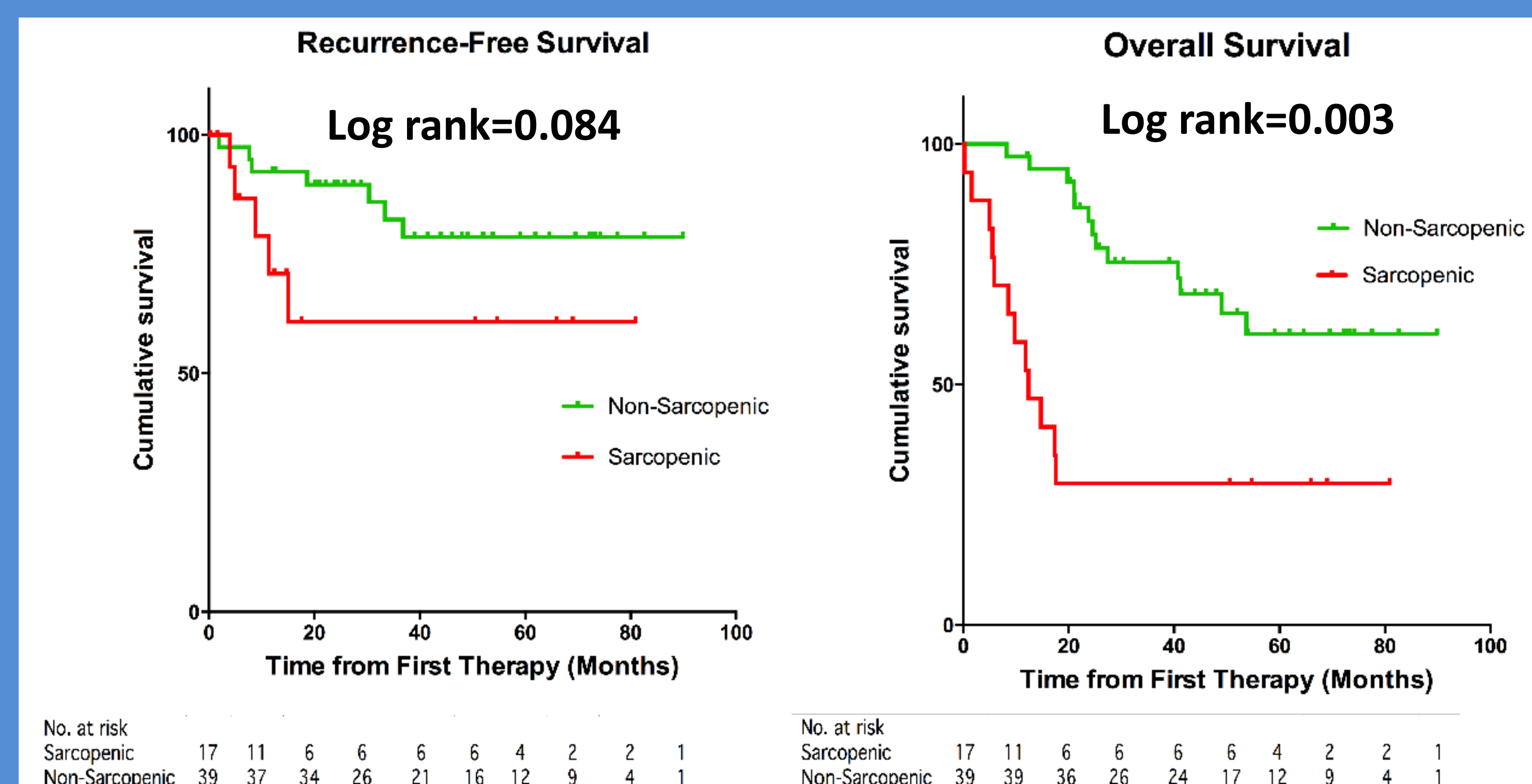
Methods

- A retrospective analysis of consecutive patients who underwent surgical resection for gastric adenocarcinoma between 2008 and 2014 was conducted in a tertiary referral centre in Ireland.
- Patient demographics, pathological data and staging and pre-operative CT scans were collected from patient charts, pathology databases and the PACS imaging system respectively. Post-operative information including complications (Clavien-Dindo classification), tumour recurrence and mortality were obtained from medical and radiological records.
- CT scans were analysed using Osirix v.5.6.1 open source software (32-bit; <http://www.osirix-viewer.com>). Two sequential scans at the level of the third lumbar vertebra, in which both transverse processes were visible were used. The total muscle area was calculated for the two slices, averaged and normalised for patient height. The cut-off values for a low skeletal muscle index were those of Prado *et al.*, 2008⁶.
- Statistical analysis was carried out using SPSS v20.0 software (SPSS Inc., Chicago, IL). The impact of sarcopenia on post-operative morbidity was analysed by univariate and multivariate regression analysis. Overall and recurrence-free survival were evaluated by Kaplan-Meier survival analysis. Risk factors for overall and recurrence-free survival were identified using cox regression analysis.

Results

- Both sarcopenic and non-sarcopenic groups were equally matched pre-operatively with the exception of weight and BMI
- Sarcopenia was a predictor of in-hospital major complications (Clavien-Dindo on multivariate analysis (OR=3.508, P=0.042).
- Sarcopenia was associated with a decreased overall survival (Log Rank=0.003) and was an adverse prognostic predictor of overall survival on multivariable analysis (HR=10.915, P=0.001).

	All Patients n=56	Sarcopenic n=20	Non-sarcopenic n=36	P-value
Major Complication (Clavien-Dindo ≥3a) (%)	20 (35.7)	11 (55)	9 (25)	0.025
Number of Hospital Days (range)	21.46 (7-71)	25.1 (7-57)	19.44 (8-71)	0.373
Total Number of ICU bed days (range)	6.68 (0-62)	9.45 (0-43)	5.08 (0-62)	0.007
In-hospital Mortality (%)	3 (5.36)	3 (15)	0 (0)	0.041



Conclusion

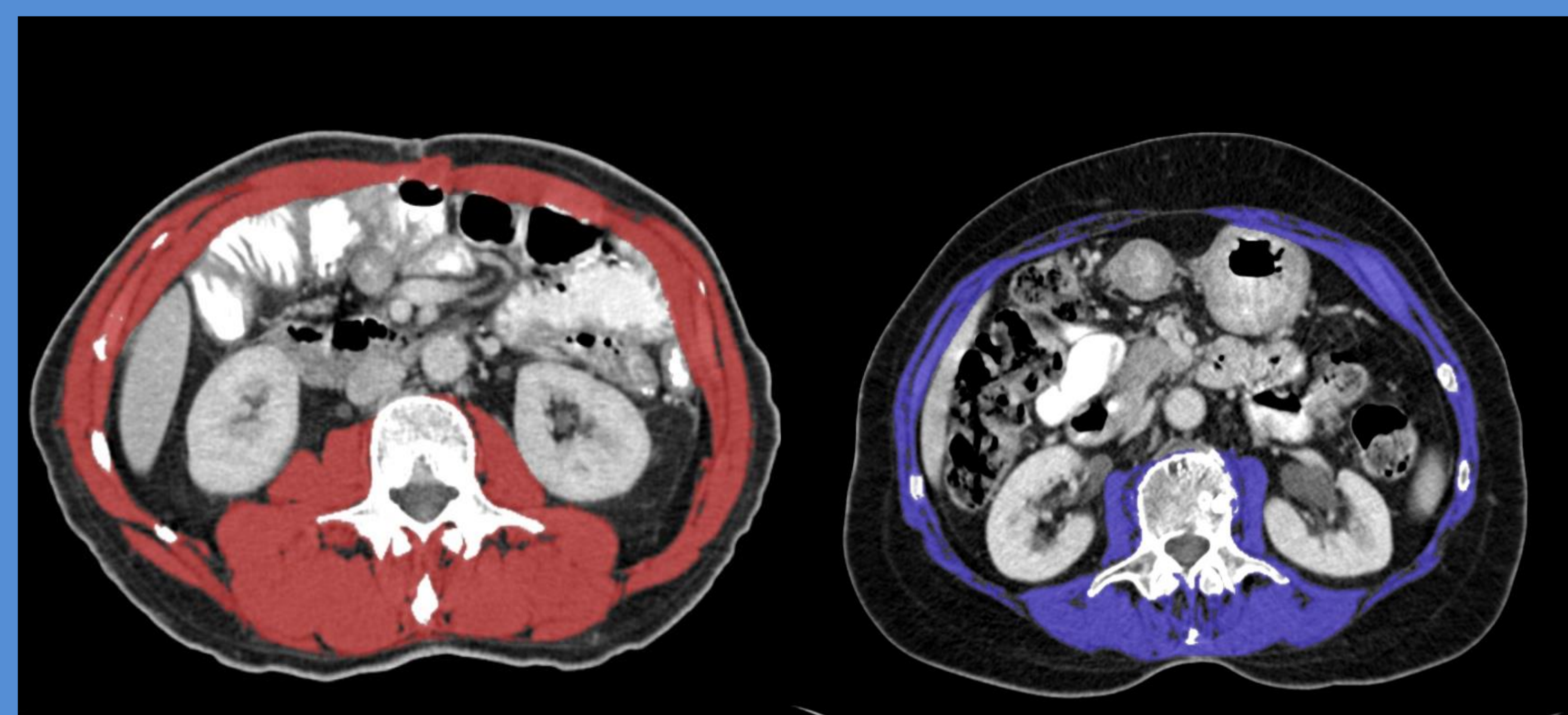
In this cohort, sarcopenia is associated with a decreased overall survival in patients with gastric cancer undergoing surgical resection and is an independent predictor of serious post-operative complications. The results of this study

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Male 60 Stage 3C -Non-Sarcopenic

Female 61 Stage 3B- Sarcopenic