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# LOW SKELETAL MUSCLE INDEX AND MYOSTEATOSIS AS PREDICTORS OF MORTALITY IN CRITICALLY ILL SURGICAL PATIENTS

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## Background and aims

After elective surgeries, low muscle mass and other specific body composition indexes, assessed by computed tomography (CT), are associated with adverse outcomes such as an increased risk for postoperative complications and higher mortality. However, limited information is available about the role of these indexes on short- and long-term outcomes in surgical patients admitted to the intensive care unit (ICU). The aim of this study was to assess the association of body composition indexes with 90-d mortality in this specific patient cohort.

## Methods

This was a retrospective study including adult surgical patients admitted to the ICU between 2014 and 2018 who underwent a CT scan at the time of admission. Total muscle area (TMA), total fat area (TFA), visceral fat area (VFA), and intramuscular fat area (IMFA) were measured. We then calculated skeletal muscle index (SMI; TMA/m2), myosteatosis (IMFA/TMA), and visceral fat-to-muscle ratio (VFA/TMA). We analyzed the effects of these indexes on mortality.

## Results

The study included 204 patients. Overall, 90-d mortality was 28%. Log-rank test and Cox multivariate analysis on 90-d mortality showed a significant association of low SMI and myosteatosis with 90-d mortality. Myosteatosis was also significantly associated with prolonged mechanical ventilation and increased ICU length of stay.

*Table. Multivariate analysis of predictors of 90-day mortality.*

| Variable | HR | 95% CI | p |
|---|---|---|---|
| SAPS II score | 1.05 | 1.03-1.07 | <0.001 |
| CCI>4 | 2.41 | 1.36-4.28 | 0.003 |
| Skeletal muscle index | | | |
| • Middle versus lowest tertile | 0.45 | 0.24-0.83 | 0.011 |
| • Highest versus lowest tertile | 0.42 | 0.21-0.82 | 0.011 |
| Myosteatosis | | | |
| • Middle versus lowest tertile | 0.92 | 0.31-2.03 | 0.828 |
| • Highest versus lowest tertile | 2.11 | 1.10-4.02 | 0.024 |

SAPS II, simplified acute physiology score; CCI, Charlson Comorbidity Index.

## Conclusions

Specific body composition indexes may predict mortality in surgical patients admitted to the ICU. Low SMI and myosteatosis were independently associated with increased 90-d mortality

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