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Calf Circumference Is a Good Predictor of Longer Hospital Stay and Nutritional Risk in Emergency Patients: A Prospective Cohort Study

Micheli Tarnowski, Elana Stein, Aline Marcadenti, Jaqueline Fink, Estela Rabito & Flávia Moraes Silva

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Abstract

Objective: This study aimed to evaluate the validity of calf circumference (CC) in identifying malnourished patients and patients at nutritional risk and determine the association between CC and clinical outcomes of hospitalized patients.

Methods: A prospective cohort study was conducted involving patients admitted to the emergency department of a tertiary hospital in the first 48 hours of admission.

Nutritional risk was determined using Nutritional Risk Screening, malnutrition was diagnosed using subjective global assessment, and CC was manually measured. Brazilian cutoff points for CC were used to identify low muscle mass. The outcomes of interest were length of emergency care and hospital stay, occurrence of infection, and death, besides nutritional risk and malnutrition.

Results: In total, 528 patients (52.76 ± 16.18 years; 54.6% females) were followed up for 9.0 (3.0–19.0) days; 39.6% of them had reduced CC values. The accuracy of CC in identifying patients at nutritional risk and malnourished patients was 67.7% and 54.1%, respectively. The cutoff value of 36.5 cm was highly accurate in identifying nutritional risk [AUC-ROC curve = 0.764 (95% CI: 0.704–0.825) for men, and AUC-ROC curve = 0.716 (95% CI: 0.659–0.774) for women]. Patients with low CC had a 1.59-fold (95% CI: 1.07–2.36) greater likelihood of a long hospital stay than patients with normal CC.

Conclusions: Low CC values have satisfactory validity in identifying nutritional risk and are associated with long hospital stay.

Keywords: Calf circumference, nutritional assessment, mortality, length of hospital stay

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Disclosure statement

The authors declare no conflict of interest.

Author contributions

F.M.S., A.M., J.F., E.R. contributed to conception and design of the study. F.M.S. and J.F. contributed to acquisition of the data. F.M.S. analyzed the data. M.T., E.S., and F.M.S. interpreted the results and draft the manuscript. All authors critically revised the manuscript, gave final approval and agree to be accountable for all aspects of work ensuring integrity and accuracy.