Letter to Editor

Effects of malnutrition on mortality in oldest-old inpatients with COVID-19 in the GERIA-COVID cohort: Additional findings from the AgeBru cohort

Dear Editor,

Malnutrition is associated with higher mortality [1,2] and longer length of stay [3] in patients with COVID-19 and the expert statements and practical guidance from the European Society of Clinical Nutrition and Metabolism (ESPEN) on the nutritional management of individuals with SARS-CoV-2 infection [4] recommend several malnutrition assessment tools. The association between score on the Geriatric Nutritional Risk Index (GNRI) and mortality was also evaluated in our paper reporting results from the GERIA-COVID cohort, where "no association between 14-day, 3-month and 12-month mortality was found…" [5]. This letter reports the association of GNRI score with length of stay in older inpatients with COVID-19 in the *Age*ing in *Bru*ssels (AgeBru) cohort.

The AgeBru cohort included consecutive inpatients aged 65 years or more admitted to a university hospital due to COVID-19 (20/03/2020–11/05/2021) (ClinTrials.govNCT05276752). Data were collected retrospectively from medical records. Two groups were categorized at baseline: patients at risk (GNRI≤98) and not at risk (GNRI>98) of malnutrition. Two hundred and twenty-four patients (78.3 ± 9.4 years old; 52.2 % women) met the inclusion criteria and 151 (67.4 %) were at

risk. Double *t*-test and Cox analysis were calculated. The group with GNRI ≤ 98 had a length of stay of 16.75 days [CI 95 % 11.90–21.58] and the group with GNRI > 98, 17.86 days [CI 95 % 15.20–20.53]. The length-of-stay Hazard Ratio of having a GNRI ≤ 98 was 0.90 [CI95% 0.68–1.19; P = 0.454]. No significant differences between the two groups were found (Table 1).

The lack of association between GNRI and length of stay was maybe due to the limited sample size. Moreover, patients at risk of malnutrition might have died sooner and had therefore a shorter length of stay. This letter supports the findings in GERIA-COVID, where the GNRI did not seem to be the most appropriate assessment tool in older inpatients with COVID-19 [5] and endorses the ESPEN statements [4], which did not recommend the GNRI for this population.

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Declaration of competing interest

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Table 1
Unadjusted and adjusted Hazard Ratio (HR) from Cox proportional hazards modeling for length-of-stay in the AgeBru cohort (N = 224).

	Unadjusted model		Adjusted model 1		Adjusted model 2	
	HR [95% CI]	P-value	HR [95% CI]	P-value	HR [95% CI]	P-value
GNRI at high risk (≤98)	0.90 [0.68–1.19]	0.454	0.93 [0.70–1.24]	0.623	0.97 [0.72–1.32]	0.847
Each additional year of age	0.99 [0.97–1.00]	**0.030**	0.98 [0.96–1.00]	**0.022**	0.97 [0.95–0.99]	**0.014**
Being of female sex	0.94 [0.72–1.22]	0.632	0.93 [0.70–1.22]	0.599	0.91 [0.68–1.20]	0.497
Being cohabiting with partner	0.81 [0.622–1.06]	0.124	0.91 [0.68–1.21]	0.516	0.91 [0.68–1.21]	0.509
Each additional point on Katz index	0.97 [0.94–1.00]	0.069	–		–	
Each additional point of CRP	1.00 [1.00–1.00]	0.968	–		0.99 [1.00–1.00]	0.354
Each additional point of BMI	1.02 [1.00–1.05]	**0.036**	–		–	
History of hypertension	0.88 [0.63–1.23]	0.464	1.04 [0.71–1.52]	0.826	1.06 [0.73–1.55]	0.754
History of diabetes mellitus	1.06 [0.80–1.38]	0.685	0.92 [0.69–1.21]	0.542	0.92 [0.70–1.22]	0.585
History of cardiopathy	0.76 [0.58–0.99]	**0.040**	0.82 [0.60–1.12]	0.215	0.81 [0.59–1.10]	0.183
History of chronic respiratory disease	0.94 [0.69–1.27]	0.677	0.88 [0.63–1.22]	0.433	0.90 [0.64–1.25]	0.527
History of cognitive impairment	0.60 [0.45–0.80]	**0.000**	–		–	
History of cancer	0.71 [0.53–0.96]	**0.027**	0.68 [0.49–0.94]	**0.019**	0.67 [0.48–0.93]	**0.015**

BMI: body mass index; CI: confidence interval; CRP: C-reactive protein; GNRI: Geriatric Nutritional Risk Index. Two groups of patients were defined according to the risk level: Patients at high risk (GNRI ≤98) and patients at low risk (GNRI >98). Adjusted model 1: Age, sex, cohabiting with partner, hypertension, diabetes mellitus, cardiopathy, chronic respiratory disease, and cancer were used as adjusting variables. Adjusted model 2: Same model 1 with the C-reactive protein (CRP) as added adjusting variable.

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Acknowledgments

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