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GERIATRIC NUTRITIONAL RISK INDEX: A POSSIBLE INDICATOR OF SHORT-TERM MORTALITY IN ACUTELY HOSPITALIZED OLDER PEOPLE

To the Editor: Malnutrition is a common problem in hospitalized elderly patients[1] and tends to worsen during hospitalization.[2] Many methods for assessing nutritional status have emerged over the years. Early screening allows subjects at risk to be identified and nutritional complications to be prevented when prompt and adequate nutritional treatment is provided. The new Geriatric Nutritional Risk Index (GNRI) has been recently introduced for predicting nutrition-related risk of morbidity and mortality in elderly patients, whose normal weight is frequently difficult to establish.[3] This has been obtained by replacing usual body weight in Buzby's Nutritional Risk Index (NRI) formula with ideal weight (NRI = (1.519 × albumin, g/L) + (41.7 × present/usual body weight); GNRI = (1.489 × albumin, g/L) + (41.7 × weight/ideal body weight)) calculated according to the Lorentz formula.[3,4] This prognostic nutritional index was designed and then validated on the basis of a 6-month severity score, which grades subject outcome (death, presence of pressure ulcers or infectious complications, alive without complications), in two series of patients (first, N = 181; second, N = 2,474) aged 65 and older admitted to a geriatric rehabilitation care hospital.[3] Thus, the GNRI seems to fit a subacute care setting best and to address long-term complications. In elderly patients, acute life-threatening complications are more frequent, and hospital admission may be necessary to treat them. It is against this background that the utility of prognostic indexes for acute hospitalized subjects should be taken into account. Systematic recording of assessment tools at admission should allow not only for the prevention of further complications but also to indicate that the patient is in a critical state. The GNRI was used to warn of short-term (1 month) risk of death in a group of acutely hospitalized older people (73 men and 80 women; mean age ± standard deviation 77.5 ± 7.3, range 65–96; mean body mass index 26.7 ± 5.0 kg/m^2, range 14.2–37.9 kg/m^2). The GNRI[3] and the Mini Nutritional Assessment (MNA)[5] were performed within 48 hours. Patients with hepatic or renal disease and those who were dehydrated (natremia >145 mmol/L) were excluded. According to GNRI cutoffs, 28 subjects (18.3%) were at severe risk (GNRI < 82), 21 (13.7%) at moderate risk (82 ≥ GNRI < 87), 27 (17.7%) at low risk (87 ≥ GNRI < 92), and 77 (50.3%) at no risk (GNRI ≥ 92). After 1 month, seven subjects (4.6%) had died (mean length of stay 15.0 ± 8.1 days, range 4–25 days). All of them had a GNRI less than 82 (74.6 ± 5.9) and a concordant MNA score less than 17 (malnutrition; 12.3 ± 3.8). Accordingly, 25% of the patients, classified as at severe risk, died.

Variable indices, such as weight loss, total lymphocyte count, and albuminemia, have been suggested as good outcome predictors (morbidity and mortality).[6,7] Albumin, despite frequent use, remains an unreliable indicator of nutritional status, because it may be more related to hydration or inflammation.[3,7] Thus, adding information on ideal weight, as with the GNRI, might give a better prediction of nutrition-related complications. The good concordance found with the MNA score in this series of patients seems to further support this. The European Society of Parenteral and Enteral Nutrition recommends the MNA as the criterion standard in the identification of malnutrition in elderly patients.[8] Alternatively, it should be considered that, in spite of being rapid (up to 20 min) and economical, it is sometimes difficult to get all its questions answered. In our study, this was possible also through the assistance of surrogates (e.g., family, nurses, home-care staff). Performing the GNRI takes only a few minutes (for weight and knee-height measurements and blood sample collection) and requires low-grade participation of the patients. Thus, the GNRI seems to be applicable also to acutely admitted older, giving a warning on short-term risk of mortality.

The size of the sample is an obvious limit to the present observation, and future studies should be performed. Alternatively, the use of simple and accurate assessing tools in clinical practice is once again underscored.

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GERIATRIC PATIENTS' MOBILITY STATUS AS REFLECTED BY THE RELEVANT ITEMS OF THE BARTHEL INDEX AND IN-HOSPITAL FALLS

To the Editor: Although falls and fall-related injuries substantially contribute to adverse events in older hospitalized patients,[1,2] available data of in-hospital fall prevention are scarce.[3,4] The identification of patients most eligible for preventive interventions is crucial.[5] Combinations of risk factors for falls are more the rule than the exception in hospitalized patients, of which mobility status itself is often extremely variable interindividually and, furthermore, can change intraindividually during the hospital stay. This may imply methodological problems of risk assessment. One thousand five hundred ninety-six fall events were recently analyzed in a large geriatric in-hospital cohort.[6] The frequency of falls varied substantially over time and between patients of different diagnostic groups, with Parkinson patients showing the highest fall rate, although there was no clear relationship with activity of daily living status as measured using the Barthel Index (BI)[7] except that patients who fell had significantly lower total BI scores than patients without falls. Observations on the relationship between patients' mobility status as reflected by the relevant BI items (transfer, walking, stair climbing) and falls from another in-hospital cohort of the years 2003 to 2005 (6,040 patients; mean age ± standard deviation, 80.7 ± 8.5; 68.9% women) are reported here.

RESULTS

In general, the mean value of the total BI scores was lower in patients with than without falls (39.3 ± 20.8 vs 48.3 ± 25.6; $P < .05$). The percentage of patients with falls was lowest in those with the highest BI mobility-item score levels. This held true for admission and discharge (Table 1). Furthermore, from admission to discharge, the number of patients with falls predominantly increased by variable degrees, from 1.7 to 5.1%, corresponding to improving score levels of the items "transfer" and "walking." There were only modest changes for "stair climbing."

CONCLUSION

As could be expected, actual mobility status was related to falls in hospitalized geriatric patients. Patients' functional competence in moving safely changed over time. Even as patients reached higher levels of mobility, their fall risk transiently increased. Therefore, hospital in-patients' mobility status as assessed on admission should not be regarded as a "static or constant variable." This may have implications for adequate fall-risk assessment at any time during a hospital stay, which is a prerequisite for the targeting and adaptation of preventive interventions.

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Table 1. Admission and Discharge Scores for Mobility Items (Barthel Index) and Percentage of Patients Who Fell During Hospital Stay (N = 6,040)

	Admission			Discharge			
Item	Score	Patients, n	Patients Who Fell, %	Score	Patients, n	Patients Who Fell, %	Difference (Percentage of Patients Who Fell)
Transfer	15	953	4.8	15	2,519	9.3	+4.5
	10	1,805	12.3	10	1,868	16.8	+4.5
	5	2,338	17.9	5	1,045	19.6	+1.7
	0	944	13.2	0	608	9.5	−3.7
Walking	15	383	3.4	15	1,311	6.3	+2.9
	10	1,514	8.9	10	2,513	13.8	+4.9
	5	2,195	16.1	5	1,042	21.2	+5.1
	0	1,948	15.9	0	1,174	13.5	−2.4
Stair climbing	10	183	4.4	10	668	4.2	−0.2
	5	909	7.4	5	1,951	10.9	+3.5
	0	4,948	14.9	0	3,241	16.7	+1.8