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Medicine

Malnutrition among Serious Trauma Patients in Intensive Care

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Abstract	Original Research Article

Undernutrition is a frequent situation in intensive care, including serious trauma. Its prevalence is around 50%. It is associated with an increase in morbidity and mortality among patients hospitalized in intensive care. Our study focused on the evaluation of the nutritional status of serious trauma patients admitted to the intensive care unit of the IBN TOFAIL hospital. We used the BUZBY index (NRI) as screening tools. 35% of patients had a normal nutritional status when admitted to intensive care, 65% of patients were undernourished, including 30% who were severely undernourished. The prevalence on the 3rd day of hospitalization was 75% and 100% after 15 days of hospitalization. The worsening of nutritional status during hospitalization was 61.5%. It appears necessary to adopt a nutritional assessment and management of the patient admitted to intensive care in order to hope for an improvement in his prognosis and his chances of survival within the framework of an early rehabilitation program.
Keywords: The Nutritional Status of Serious Trauma Patients Hospitalized in the Intensive Care Unit.

INTRODUCTION

Undernutrition represents the state of an organism in nutritional imbalance, characterized by a negative energy and/or protein balance [1]. It is very common in intensive care, there is a worsening of the nutritional state the year following the stay in intensive care and mortality estimated at around 20%. Muscle wasting is estimated at 2% per day in intensive care patients, which has a direct impact on the occurrence of complications, such as an increase in nosocomial infections, delayed healing and difficulty weaning from mechanical ventilation, resulting in an increase in stays in intensive care and hospital [2]. Undernutrition leads to a health cost 45 to 102% higher than that of a non-malnourished person [3].

MATERIALS AND METHOD

This is a prospective descriptive evaluative study of the nutritional status of severe trauma patients hospitalized in the intensive care unit of IBN TOFAIL hospital. Our study was carried out for 6 months. We excluded from our study all patients hospitalized in intensive care for a cause other than serious trauma.

To assess the nutritional status of patients, we used as a diagnostic tool the BUZBY index or nutritional risk index (RNI) which uses the dosage of plasma albumin and the percentage of weight loss as follows.

$$NRI = 1.519 * albumin(g/l) + 0.417 * (weight/usual\ weight)\ (kg)$$

Interpretation:
* Higher NRI: 97.5 (low or no risk/patient at risk of malnutrition)
* NRI between 83 - 97.5 (medium risk/moderate malnutrition)
* NRI less than 83 (severe malnutrition/high risk)

RESULTS

We included in our study 75 patients for whom we assessed their nutritional status on admission, on the 3rd, 7th and 15th day of hospitalization in intensive care. Our analyzes show that 35% of our patients had a normal nutritional status when admitted to intensive care, 65% of patients were in a state of malnutrition (30% in severe malnutrition and 35% in moderate malnutrition). 75% presented malnutrition on the 3rd day of hospitalization, among which 44% were severely malnourished and 56% were moderately malnourished. 25% of patients had normal nutritional status on the 3rd day of hospitalization and were at risk of developing malnutrition during their stay in intensive care. 84% were affected by severe malnutrition on the 7th day of their hospitalization in intensive care, 12% were affected by moderate malnutrition on the 7th day of hospitalization. 92% were affected by severe malnutrition after 15 days of

hospitalization in intensive care, 7.6% developed moderate malnutrition after 15 days of hospitalization in the unit. Patients with a severe nutritional state on the 3rd day kept the same nutritional state throughout the duration of their hospitalization. 53.8% saw their nutritional status worsen during the duration of their stay in intensive care, 57% saw their nutritional status go from moderate with medium nutritional risk to severe with high nutritional risk, 43% saw their nutritional status change from normal with low nutritional risk to severe with high nutritional risk. 7.69% of our cohort maintained a stable or moderate nutritional status with average nutritional risk. The worsening of nutritional status during the stay in intensive care is observed in 61.5% of patients. Ventilatory weaning with recourse to tracheotomy is the complication most associated with malnutrition with a prevalence of 30%. It is exclusively encountered in patients who developed severe malnutrition during their hospitalization in intensive care, it is even more common in patients presenting severe malnutrition on admission. Severe malnutrition during hospitalization in intensive care was associated with a prolonged stay in intensive care with an average duration of 32 days.

DISCUSSION

Undernutrition is responsible for an imbalance which is responsible for deleterious effects on tissues with measurable changes in bodily functions and/or body composition associated with a worsening of disease prognosis, a reduction in quality of life and particularly in the elderly, an increased risk of dependence. A vicious circle then sets in between the causes and consequences of malnutrition [1].

During severe trauma, the human body goes through various phases, an initial catabolism phase then an anabolic phase. Prevention of malnutrition begins before the catabolic phase, from admission. Early nutrition should be favored, preferably via enteral physiological route. Undernutrition is a dynamic process that evolves over time, its management must also be dynamic from the first day as part of a rehabilitation program also involving other aspects, namely rehabilitation, ventilatory weaning, early mobilization.

The prevalence of malnutrition on the 3rd day of hospitalization in intensive care during our study represented 75% of admissions to intensive care, with 44.4% for severe malnutrition and 56% for moderate malnutrition. These results are similar to those obtained by Dorothée bedock *et al.*, who conducted a study on malnutrition in patients admitted to an intensive care unit for covid-19 with a prevalence of malnutrition at 70% [4], as well as those of the study conducted by Pennsylvania Rogghe E T Al. On the prevalence of malnutrition on admission and experience with mortality in intensive care with a prevalence of 77% of malnourished patients [5].

The prevalence of malnutrition after a minimum hospitalization period of 15 days in intensive care was 100% with 92% of patients suffering from severe malnutrition and 7.6% of patients suffering from moderate malnutrition. Our results are similar to those obtained by Olga Lucia Pinzon - Espitia *et al.*, On undernutrition and covid-19 with a prevalence of 74.3% of undernourished patients in intensive care [6]. Similar figures were obtained by UMUT SABRI KASOPOGLU *et al.*, on the comparison of nutritional status assessment tools to predict 30-day survival in critically ill patients with Covid pneumonia, resulting in a prevalence of 81.4% with the mNUTIC score [8].

The prevalence of malnutrition after 7 days of hospitalization was 96% with 84% of patients suffering from severe malnutrition and 12% suffering from moderate dentition; our results are similar to those of the study conducted by MEGHENEM *et al.*, On how to code malnutrition in surgical intensive care with a prevalence after 7 days of hospitalization of 95.4% [8].

CONCLUSION

Malnutrition in the intensive care unit is almost permanent for all hospitalizations, and associated with a negative evolution of the patient's condition. The nutritional assessment and management of patients admitted to intensive care must be subject to surveillance monitoring in order to improve the patient's prognosis. This is a fundamental element in the early rehabilitation of the patient in intensive care, requiring a multimodal approach involving all care professionals, namely the intensive care nurse, the nutritionist, the physiotherapist.

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