

Prevalence, Incidence, and Complications of Malnutrition in Polytrauma Patients

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Purpose: Severely injured (polytrauma) patients may suffer from acute disease or injury-related malnutrition involving a marked inflammatory response. Because of the stress response following traumatic injuries, polytrauma patients often endure an altered metabolic state in order to preserve energy for vital tissues. This study investigated the prevalence and incidence of malnutrition, and its relation with complications and in-hospital outcomes in polytrauma (ISS ≥ 16) patients admitted to the ICU.

Methods: This observational prospective cohort study included polytrauma patients admitted to the ICU of 5e Level I trauma centers in the Netherlands and United States. Malnutrition was defined as a Subjective Global Assessment score ≤ 5 . Complications included systemic-, surgery-, and fracture-related complications, pneumonia, urinary tract infection, deep venous thrombosis, pulmonary embolism, and mortality. The complication rate (CR) was compared between patients who had or developed malnutrition and patients who remained well-nourished using multivariable logistic regression analysis.

Results: Of the 100 included patients, 12 (12%) were malnourished at admission. The incidence of malnutrition at the ICU was 50% (95% confidence interval [CI] 40-60%) and the incidence of overall in-hospital developed malnutrition was 70% (95% CI 61-80%). The CR was significantly lower in the well-nourished group than in the malnourished group during ICU admission (30% vs 54%; $P = 0.03$) and hospital admission (35% vs 64%; $P = 0.02$). The risk of complications in malnourished patients was 3.3 times (95% CI 1.2-9.0) higher than in well-nourished patients. Pneumonia occurred less frequently in patients that remained well-nourished (14% vs 46%; $P < 0.01$).

Conclusion: 50-70% of polytrauma patients developed malnutrition during hospital admission. Malnutrition was related to an increased risk of complications, in particular pneumonia. Recognition of sub-optimally nourished polytrauma patients, assessment of their nutritional needs, and preemptive nutritional strategies are crucial to optimize their clinical outcomes.