Association of Preexisting Medical Conditions with In-Hospital Mortality in Multiple-Trauma Patients

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BACKGROUND: Mortality after trauma has been shown to be influenced by host factors, such as age and preexisting medical conditions (PMCs). The independent predictive value of specific PMCs for in-hospital mortality after adjustment for injury severity, injury pattern, age, and presence of other PMCs has not been fully elucidated.

STUDY DESIGN: Records of 11,142 trauma patients (18 years of age or older, Injury Severity Score ≥ 16, years 2002 to 2007) documented in the Trauma Registry of the German Society for Trauma Surgery were analyzed to assess the association of PMCs with in-hospital mortality. Multiple logistic regression models were used for this analysis.

RESULTS: PMCs were affirmed for 3,836 of the 11,142 patients studied (34.4%). An independent statistical association with increased in-hospital mortality was found for 6 of 14 analyzed PMCs after adjustment for age and the Revised Injury Severity Classification score, respectively, ie, heart disease, obesity, hepatitis/liver cirrhosis, malignancies, coagulation disorder, and peripheral arterial occlusive disease stage IV. The association with mortality varied with different injury patterns.

CONCLUSION: Specific PMCs were associated with increased mortality after trauma independent from injury severity and age. Knowledge of the identified relevant PMCs could help the medical team to be able to assess the mortality risk profile of trauma patients in a more detailed and quantifiable way. (J Am Coll Surg 2009;209:75–81. © 2009 by the American College of Surgeons)

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In-hospital mortality after trauma is not only related to the injury itself but also to individual “host factors.”1-5 These host factors can substantially impair the individual physiologic reserve in response to trauma and include, for example, age, gender, and injury-independent preexisting medical conditions (PMCs). Already in 1990, Morris and colleagues6 suggested a strong interaction between trauma and physiologic reserve after trauma with respect to outcomes.

Several authors have described a steady increase in mortality with increasing age,3,7,8 which is commonly accepted as being associated with increased risk for fatal outcomes. To date, it has not been fully clarified whether it is because of a higher frequency of PMCs or because of increasing age itself. Despite some reports on the potential association of increased mortality with certain PMCs in combination with trauma,1,5,9 it is unclear if this statistical association is still substantial when adjusted for other variables, such as injury severity, injury pattern, age, or other PMCs in multivariable analyses.

We used the Trauma Registry of the German Society for Trauma Surgery to investigate the individual prognostic value of selected PMCs documented in the database from severely injured patients. In addition, we investigated whether organ-specific diseases would show a greater impact in cases of local trauma.