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Changes in the temporal distribution of in-hospital mortality in severely injured patients—An analysis of the TraumaRegister DGU

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Abstract

Background

The temporal distribution of trauma mortality has been classically described as a trimodal pattern with an immediate, early and late peak. In modern health care systems this time distribution has changed.

Methods

Data from the TraumaRegister DGU was analysed retrospectively. Between 2002 and 2015, all registered in-hospital deaths with an Injury Severity Score (ISS) $\geq$ 16 were evaluated considering time of death, trauma mechanism, injured body area, age distribution, rates of sepsis and multiple organ failure. Pre-hospital and post-discharge trauma deaths were not considered.

Results

78 310 severely injured patients were registered, non-survivors constituted 14 816, representing an in-hospital mortality rate of 18.9%. Mean ISS of non-survivors was 36.0±16.0, 66.7% were male, mean age was 59.5±23.5. Within the first hour after admission to hospital, 10.8% of deaths occurred, after 6 hours the percentage increased to 25.5%, after 12 hours 40.0%, after 24 hours 53.2% and within the first 48 hours 61.9%. Mortality showed a constant temporal decrease. Severe head injury (defined by Abbreviated Injury Scale, AIS-Head$\geq$3) was found in 76.4% of non-survivors. Patients with an isolated head injury showed a more distinct decrease in survival rate, which was accentuated in the first days after admission. The correlation of age and time of death showed a proportional increase with age (55-74a). The rate of sepsis and multiple organ failure among non-survivors was 11.5% and 70.1%, respectively.