Could a regional trauma system in eastern Switzerland decrease the mortality of blunt polytrauma patients? A prospective cohort study

Joseph Osterwalder

BACKGROUND: In Europe and Switzerland, hardly any studies have been performed on regional trauma systems. We therefore decided to conduct a prospective study in our region to establish whether an organized trauma system derived from the American model would have a beneficial effect on the survival of blunt polytrauma patients. METHODS: In a prospective observational cohort study conducted between 1990 and 1996, we compared the actual mortality in 280 blunt polytrauma patients admitted directly to our trauma center with the predicted mortality using the A Severity Characterization of Trauma score. The same comparison was made for 190 transferred polytrauma admissions from regional hospitals. Our hypothesis was that for the transferred admissions, the actual mortality would be significantly higher than predicted, but that there would be no difference for the directly admitted patients. Inclusion criteria were blunt trauma of at least two body sites and an Injury Severity Score of 8 or more. RESULTS: Mortality in the patients admitted directly to the trauma center was 11.8% (33 of 280), which was not significantly lower than that for the transferred admissions at 14.2% (27 of 190). There were 10% (3 of 30) more deaths than predicted among the direct admissions (i.e., 3 more deaths; 95% confidence interval, -5.2-11.1; p = NS). Among the transferred admissions, there were 46% (8.6 of 18.4) more deaths than predicted (i.e., 8.6 more deaths; 95% confidence interval, 2.5-14.7; p < 0.05). CONCLUSION: It is likely that a regional trauma system in eastern Switzerland for polytrauma patients with an ISS of 8 or more would have a moderately positive effect on mortality. During the period of observation, transferred admissions from regional hospitals to our trauma center had a 46% higher mortality than predicted. In absolute terms, therefore, with a regional trauma system, it might have been possible to avoid between one death every 2 to 3 years and two to three deaths every year.