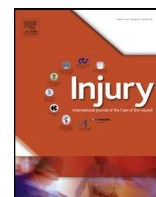




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Impact of body mass index on outcomes after thoracic trauma—A matched-triplet analysis of the TraumaRegister DGU[®]



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ABSTRACT

Introduction: Chest trauma and obesity are both associated with increased risks for respiratory complications (e.g. hypoxia, hypercarbia, pneumonia), which are frequent causes of posttraumatic morbidity and mortality. However, as there is only limited and inconsistent evidence, the aim of our study was to analyse the effect of body mass index (BMI) on patient outcomes after thoracic trauma.

Patients and Methods: We screened 50,519 patients entered in TraumaRegister DGU[®], between 2004–2009, when the BMI was part of the standardized dataset. After matching for injury patterns and severity of trauma we performed a matched triplet analysis with regard to the BMI (group 1: <25.0 kg/m²; group 2: 25.0–29.9 kg/m²; group 3: >30.0 kg/m²). Data are shown as percentages and mean values with standard deviation.

Results: The matching process yielded a cohort of 828 patients with serious blunt thoracic trauma, evenly distributed over the 3 BMI groups (276 triplets). BMI did not have an impact on the need for prehospital or emergency department interventions. There was a trend towards more liberal use of whole-body-CT scanning with increasing BMI (group 1: 68.8%; group 2: 73.2%; group 3: 75.0%). Additional abdominal injuries were more common in normal weight patients (Group 1: 28.3%; Group 2: 14.9%; Group 3: 17.8%). Obesity (BMI > 30.0 kg/m²) had a significant impact on the duration of mechanical ventilation (in days; group 1: 6.5 (9.4); group 2: 6.4 (8.9); group 3: 9.1 (14.4); p = 0.002), ICU days (in days; group 1: 11.5 (11.5); group 2: 10.9 (9.6); group 3: 14.1 (16.7); p = 0.005) and hospital length of stay (in days; group 1: 27.8 (19.3); group 2: 27.4 (19.2); group 3: 32.2 (25.9); p = 0.009). There were no significant differences regarding overall mortality (group 1: 3.6%; group 2: 1.8%; group 3: 4.0%; p = 0.26).

Conclusions: Obesity has a negative impact on outcomes after blunt chest trauma, as it is associated with prolonged duration of mechanical ventilation, ICU and hospital length of stay. Mortality did not seem to be affected, yet, further research is required to confirm these results in a larger cohort.

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Introduction

Considering the rising prevalence of obesity in the Western world and the fact that obesity is associated with a higher risk for sustaining thoracic injuries in motor-vehicle collisions, the

proportion of obese patients with thoracic trauma is likely to increase [1]. Investigating the impact of body mass index (BMI) on outcomes after thoracic injuries is of special interest, as chest trauma and obesity are both associated with increased risks for respiratory complications (e.g. hypoxia, hypercarbia, pneumonia), which are frequent causes of posttraumatic morbidity and mortality. Results of previous studies are controversial. Although obesity increases the incidence of posttraumatic pneumonia [2], data are inconsistent regarding its impact on the incidence of infectious complications in general and sepsis [3,4], as well as overall mortality. Furthermore, there are contradictory reports of both, beneficial and harmful effects on patient outcomes [3,5,6]. Further investigations within a cohort of comparable patients are

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