RESEARCH ARTICLE

Thoracic trauma now and then: A 10 year experience from 16,773 severely injured patients

Klemens Horst1,2,*, Hagen Andruszkow4, Christian D. Weber1, Miguel Pishnamaz1, Christian Herren1, Qiao Zhi2, Matthias Knobe3, Rolf Lefering3, Frank Hildebrand1, Hans-Christoph Pape4

1 Department of Orthopaedic Trauma, RWTH Aachen University, Aachen, Germany, 2 Harald Tscheine Research Laboratory, RWTH Aachen University, Aachen, Germany, 3 IFOm - Institute for Research in Operative Medicine, Faculty of Health, Department of Medicine, Witten / Herdecke University, Cologne, Germany, 4 Department of Trauma Surgery, University Hospital Zurich, Zurich, Switzerland

* khorst@ukaachen.de

Abstract

Background and purpose
Thoracic trauma remains to be a relevant injury to the polytraumatised patient. However, literature regarding how far changes in clinical guidelines for pre- and in-hospital trauma management and diagnostic procedures affect the outcome of multiple injured patients with severe chest injury during a long-term observation period is sparse.

Methods
Multiple traumatised patients (age ≥ 16y) documented in the TraumaRegister DGU® (TR-DGU) from January 1st 2005 to December 31st 2014 with severe chest trauma (AIS ≥ 3) were included in this study. Demographic data, the pattern of injury, injury severity, radiographic emergency procedures, indication for intubation, duration of mechanical ventilation, emergency surgery, occurrence of complications and mortality were evaluated per year and over time.

Results
A total of 16,773 patients were analysed. The use of whole body computer tomography increased (p<0.001), while the incidence of plain x-rays decreased (p<0.001). Furthermore, incidence of AIS,Thorax = 3 graded injuries decreased (p<0.001) while AIS,Thorax = 4 decreased (p<0.001). Both, rate of patients being intubated at the time of ICU admission decreased (p<0.001) and the time of mechanical ventilation decreased (p<0.001). Additionally, need for emergency surgery, lung failure, sepsis, and multi organ failure all decreased (p<0.001). However, mortality remained unchanged.

Interpretation
Severity of severe chest trauma and associated complications decreased while diagnostics and treatment improved over time. However, mortality remained unchanged. Our results