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Traumatic tracheobronchial injuries: incidence and outcome of 136.389 patients derived from the DGU traumaregister

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To describe the incidence, therapy and outcome of traumatic tracheobronchial injuries (TTBI) in trauma patients with multiple injuries derived from the DGU TraumaRegister. We analyzed the data on all patients listed on the TraumaRegister DGU (TR-DGU) in Germany between 2002 and 2015 aged 16 years or older and with an Injury Severity Score (ISS) of ≥ 9 . We analyzed the data on 136,389 trauma patients, 561 of whom had suffered tracheobronchial injuries (0.4%). The majority were male (73.4%) and had a mean age of 43.7 years. In total, 84.0% of all TTBI injuries occurred secondary to blunt trauma, caused mainly by accidents (71.2%). TTBI was accompanied by several concomitant thoracic injuries such as pneumo- (41.2%) and hemothorax (23.2%), lacerations (7.8%) and contusions (32.3%) of the lung, as well as multiple rib fractures (29.6%). The severity of injury was classified via the abbreviated injury scale (AIS): 39.3% with AIS = 3, 51.3% with AIS = 4 and 60% with AIS = 5 patients underwent surgical interventions. The mortality of patients with tracheobronchial injuries was higher: 24.6%, versus 13.7% in all patients (control group). This high percentage reflects their generally severe injury burden through concomitant injuries. The incidence of TTBI in this large cohort of trauma patients is very low. However, its high mortality rate emphasizes its importance. Mortality was associated with higher ISS and AIS scores. Higher rates of concomitant injuries were therefore associated with a higher mortality rate. TTBI injuries revealed a higher rate of progression to surgical management, with 35% undergoing surgery within the first 24 h. This excessive mortality rate demonstrates a high overall injury burden in patients with TTBI and high mortality of associated injuries. A surgical intervention's impact on mortality cannot be assessed in this study, as it would need to be investigated in a case-matched study.

Acute traumatic tracheobronchial injuries (TTBI) resulting from blunt or penetrating trauma are rare but severe life-threatening traumatic injuries. Their incidence and mortality have not been well described to date. Most of the underlying evidence has relied on single-center experiences or case reports. The potentially high rate of prehospital mortality may also be a factor behind this lack of published data^{1,2}.

The cause of trauma varies widely among published series. Several case-series reporting mainly blunt or penetrating trauma^{3–5} have been published. Mortality rates of patients with TTBI reporting from specialized trauma centers^{6,7} range from 10 to 20%. The outcome of patients suffering severe blunt chest trauma was worsened by suffering additional (more than 2) extrathoracic injuries. However, as the aforementioned studies were published over two decades ago, widely-used trauma scores were not employed in their assessments and reports, thus limiting their comparability⁸.

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