Injury pattern and mortality of noncompressible torso hemorrhage in UK combat casualties.

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BACKGROUND: Hemorrhage following traumatic injury is a leading cause of military and civilian mortality. Noncompressible torso hemorrhage (NCTH) has been identified as particularly lethal, especially in the prehospital setting.

METHODS: All patients sustaining NCTH between August 2002 and July 2012 were identified from the UK Joint Theatre Trauma Registry. NCTH was defined as injury to a named torso axial vessel, pulmonary injury, solid-organ injury (Grade 4 or greater injury to the liver, kidney, or spleen) or pelvic fracture with ring disruption. Patients with ongoing hemorrhage were identified using either a systolic blood pressure of less than 90 mm Hg or the need for immediate surgical hemorrhage control. Data on injury pattern and location as well as cause of death were analyzed using univariate and multivariate analyses.

RESULTS: During 10 years, 296 patients were identified with NCTH, with a mortality of 85.5%. The majority of deaths occurred before hospital admission (n = 222, 75.0%). Of patients admitted to hospital, survivors (n = 43, 14.5%) had a higher median systolic blood pressure (108 [43] vs. 89 [46], p = 0.123) and Glasgow Coma Scale (GCS) (14 [12] vs. 3 [0], p < 0.001) compared with in-hospital deaths (n = 31, 10.5%). Hemorrhage was the more common cause of death (60.1%), followed by central nervous system disruption (30.8%), total body disruption (5.1%), and multiple-organ failure (4.0%). On multivariate analysis, major arterial and pulmonary hilar injury are most lethal with odds ratio (95% confidence interval) of 16.44 (5.50-49.11) and 9.61 (1.06-87.00), respectively.

CONCLUSION: This study demonstrates that the majority of patients sustaining NCTH die before hospital admission, with exsanguination and central nervous system disruption contributing to the bulk cause of death. Major arterial and pulmonary hilar injuries are independent predictors of mortality.