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Assessment of hypovolaemic shock at scene: is the PHTLS classification of hypovolaemic shock really valid?

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OBJECTIVE: Validation of the classification of hypovolaemic shock suggested by the prehospital trauma life support (PHTLS) in its sixth student course manual.

METHODS: Adults, entered into the TraumaRegister DGU(®) database between 2002 and 2011, were classified into reference ranges for heart rate (HR), systolic blood pressure (SBP) and Glasgow coma scale (GCS) according to the PHTLS classification of hypovolaemic shock. First, patients were grouped by a combination of all three parameters (HR, SBP and GCS) as suggested by PHTLS. Second, patients were classified by only one parameter (HR, SBP or GCS) according to PHTLS and alterations in the remaining two parameters were assessed. Furthermore, subgroup analysis for trauma mechanism and traumatic brain injury (TBI) were performed.

RESULTS: Out of 46 689 patients, only 12 432 (26.5%) could be adequately classified according to PHTLS if a combination of all three criteria was assessed. In TBI patients, only 12.2% could be classified adequately, whereas trauma mechanism had no significant influence. When patients were grouped by HR, there was only a slight reduction in SBP. When grouped by SBP, GCS dropped from 14 to 8, while no significant tachycardia was observed in any group. In patients with a GCS less than 12, HR was unaltered whereas SBP was slightly reduced to 114 (±42) mm Hg. On average, GCS in TBI patients was lower within all shock groups. In penetrating trauma patients, changes in HR and SBP were more distinct, but still less than predicted by PHTLS.

CONCLUSIONS: The PHTLS classification of hypovolaemic shock displays substantial deficits in adequately risk-stratifying trauma patients.