

transthoracic echocardiography (fTTE) can be used to assess haemodynamic status in critical care settings. We describe a study carried out in a military hospital in Afghanistan, examining the use of echocardiography during damage control resuscitation.

Objectives To assess the feasibility of focused TTE (fTTE) in monitoring the response to volume infusion during damage control resuscitation following severe trauma.

Methods Ethical approval was gained for this study. fTTE was performed on ventilated patients admitted following severe traumatic injury. A baseline fTTE was performed on admission and repeated after volume resuscitation. fTTE images were independently verified, and data were collected on mechanism of injury, fTTE view availability, and fTTE-derived haemodynamic variables. Doppler of the left ventricular outflow tract (LVOT) was performed to assess respiratory variation of peak LVOT velocity and the velocity time integral (VTi), as markers of filling status. Inferior vena cava (IVC) respiratory variability was also assessed.

Results 23 patients were recruited, and 41 studies performed. Injury patterns were: blast 53%, gunshot wound 25%, combined 22%. fTTE windows acquired were: Parasternal long axis 94%, parasternal short axis 86%, apical 4 chamber 66%, subcostal 77%. IVC imaging was possible in 85%, and Doppler interrogation of the LVOT achieved in 73%. Mean baseline parameters were: heart rate 107.4, BP 106/58, CVP 5.2, LV fractional shortening 33.98 \pm 2.15%, LVOT VTi variability 22.58 \pm 3.02%, LVOT peak velocity variability 18.87 \pm 2.14%, IVC variability 23.32 \pm 6.76%. Post-resuscitation parameters following a mean fluid bolus of 728 \pm 111 ml revealed no significant changes in blood pressure, CVP or heart rate. Interestingly, however, echocardiography detected the following significant changes: LVOT VTi variability fell by 9.15% to 13.43 \pm 3.34% ($p=0.044$), LVOT peak velocity variability fell by 6.64% to 12.23 \pm 1.14% ($p=0.01$), and IVC variability fell by 12.7% to 10.62 \pm 3.31% ($p=0.03$).

Conclusions This study demonstrates, for the first time in a deployed military setting, that echocardiography can be used to monitor the response to volume infusion during damage control resuscitation of ventilated trauma patients. In particular, the application of Doppler and IVC parameters appeared highly sensitive to changes in volume status in this setting.

117

ECHOCARDIOGRAPHY, PERFORMED DURING DAMAGE CONTROL RESUSCITATION, CAN BE USED TO MONITOR THE HAEMODYNAMIC RESPONSE TO VOLUME INFUSION IN THE DEPLOYED MILITARY CRITICAL CARE UNIT

P S C Rees,¹ D P Inwald,² S D Hutchings³ ¹Barts Health NHS Trust; ²Imperial College London; ³Defence Medical Services

doi:10.1136/heartjnl-2013-304019.117

Introduction Casualties presenting to a military intensive care unit (ICU) following severe traumatic injury suffer haemodynamic instability requiring volume resuscitation. Volume status in critically ill patients is difficult to determine, and formal cardiac output monitoring is not available in the deployed military ICU. Focused