

Cardiovascular complications of pre-hospital emergency anaesthesia in patients with return of spontaneous circulation following medical cardiac arrest

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Haemodynamic instability is a common occurrence after return of spontaneous circulation following cardiac arrest. Within our UK-based helicopter emergency medical service, we performed a retrospective database review comparing ketamine and midazolam-based anaesthesia induction protocols for this cohort of patients. Over a five-year period 198 patients with return of spontaneous circulation following medical cardiac arrest received a rapid sequence intubation (RSI) by our pre-hospital team. Forty-eight patients received a ketamine-based regime median dose (IQR [range]) 1.00 [1.00-1.55] mg.kg⁻¹ and 150 a midazolam-based regime median dose 0.03 [0.02-0.04] mg.kg⁻¹. Clinically significant hypotension within 30 minutes of RSI, defined as a new systolic blood pressure (SBP) less than 90 mmHg or a 10% drop if SBP was less than 90 mmHg before induction, occurred in 54.2% of the ketamine group and 50.7% of the midazolam group (p= 0.67). Mean maximal heart rate within 30 minutes of RSI was 119 in the ketamine group and 122 in the midazolam group (p= 0.52). A shock index greater than 1.0 beat min⁻¹ mmHg⁻¹ and age greater than 70 years were both associated with post-RSI hypotension with odds ratio of 1.96 (CI 1.02-3.71) and 1.99 (CI 1.01-3.90) respectively. First pass success rates exceeded 95%. Adverse event rates, including arrhythmias, re-arrest and administration of adrenaline boluses did not significantly differ between groups. Pre-hospital emergency anaesthesia delivered by a physician-paramedic team in high acuity patients with ROSC following a medical cardiac arrest is associated with high success rates but potentially significant cardiovascular derangements.

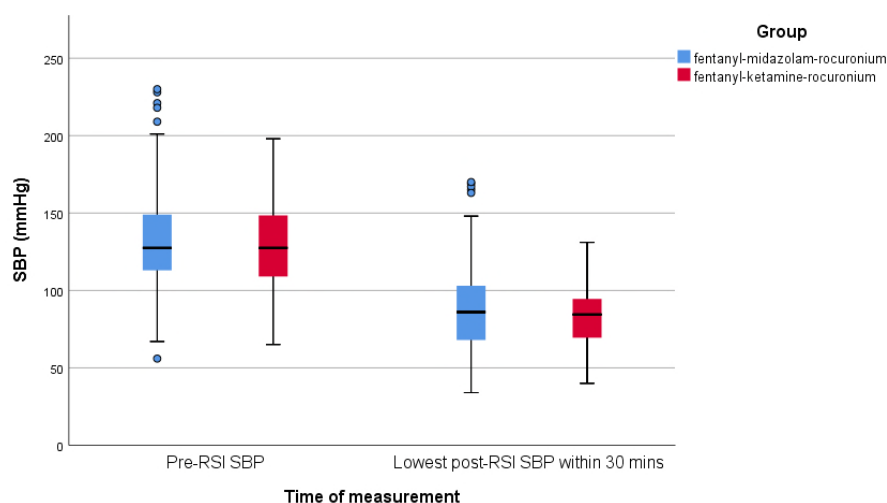


Figure 1. Boxplot of systolic blood pressures immediately before RSI (pre) and lowest value within next 30 minutes (post) for patients anaesthetised with either ketamine or midazolam. RSI, rapid sequence intubation. SBP, systolic blood pressure.