Lower versus higher oxygenation targets in hypoxaemic ICU patients after cardiac arrest

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Background: Oxygen therapy is essential in patients resuscitated from cardiac arrest, but information on the optimum oxygenation targets in these patients is limited.

Aim: We compared the effects of lower versus higher oxygenation targets in adult intensive care unit (ICU) patients with hypoxaemic respiratory failure after cardiac arrest.

Methods: We performed a subgroup analysis of the international Handling Oxygenation Targets in the ICU trial, which randomised 2928 adults with acute hypoxaemia to targets of arterial oxygen of 8 kPa versus 12 kPa in ICU for up to 90 days. Here, we report all outcomes up to one year in the subgroup of patients resuscitated from cardiac arrest before randomisation.

Results: A total of 335 patients were resuscitated from cardiac arrest: 149 in the lower-oxygenation group; 186 in the higher-oxygenation group. At 90 days, 96/147 patients (65.3%) in the lower group and 111/185 patients (60.0%) in the higher group had died (adjusted relative risk (RR) 1.09, 95% confidence interval (CI) 0.92-1.28, p = 0.32); similar results were found at one year (adjusted RR 1.05, 95% CI 0.90-1.21, p = 0.53). Serious adverse events (SAEs) being new episodes of shock, myocardial ischemia, cerebral ischemia, or intestinal ischemia occurred in the ICU in 23% of patients in the lower-oxygenation group and in 38% in the higher-oxygenation group (RR 0.61, 95% CI 0.43-0.86, p = 0.005); the difference was mainly due to more new episodes of shock in the higher-oxygenation group. No statistically significant differences were observed in the other secondary outcomes.

Conclusions: A lower oxygenation target in adult ICU patients with hypoxaemic respiratory failure after cardiac arrest did not result in lower mortality, but fewer SAEs occurred in this group compared to the higher-oxygenation group. Large-scale trials are needed to confirm or refute these results.