SEDLine Monitored Sedation and Recovery for Postoperative Ventilated Recipients of Living Donor Liver Transplantation: A Randomized Controlled Trial.

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Abstract

Background: Monitoring of adequacy of sedation and careful drug selection can minimize the risks of over sedation and side effects. We evaluate the safety and efficiency of patient state index (PSI) versus Ramsay sedation scale (RSS) on postoperative sedation for living donor liver transplantation (LDLT) recipients.

Methods: Sixty postoperative mechanically ventilated LDLT recipients sedated with desflurane were randomly allocated to either R group (Ramsay group n=30), where sedation assessed using clinical assessment with the RSS, or S group (SEDline group n=30) where sedation assessed with PSI to target sedation depth (50-75). Memorization of five words, Trieger's dot (TT), digit symbol substitution tests (DSST) were recorded. Transesophageal Doppler (TED) parameters were recorded. Duration of mechanical ventilation, postoperative side effects and cost, were recorded.

Results: Mean values of time from cessation of desflurane to eye opening (min), hand squeezing (min), verbal command (min) and to extubation were statistically significant, shorter in S group than R group ($p<0.001$). Five words recall, TT and DSST were better in S group. Patients required norepinephrine were lower in S group than R group (10 (33.3%) vs. 23 (76.7%) P=0.001). Duration of ventilation was shorter in S group than R group (6.83 ± 2.00 vs. 8.26 ± 1.68 hour, P=0.004). Systemic vascular resistance (SVR) and mean blood pressure (MBP) were better preserved in S compared to R group at all measuring points (SVR, MBP after 2hrs sedation 915.73 ± 194.31 vs. 669.20 ± 119.82 dyn.sec.cm-5, P<0.001 and 78.03 ± 6.242 vs. 65.13 ± 67.58 mmHg, P<0.001, respectively). Postoperative drowsiness, nausea and vomiting were lower in S compared to R group (P=0.000).

Conclusion: Sedation guided with PSI preserved better haemodynamics, enhanced recovery and rapid ventilation weaning at a lower cost compared to RSS monitoring. PSI-augmented sedation monitoring markedly reduced the total dose of sedative used to achieve the same level of clinical sedation without any measurable adverse effects.