Sevoflurane anesthesia in electroconvulsive therapy: a meta-analysis of randomized controlled trials

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Sevoflurane is an inhalation anesthetic frequently used in general surgery. In recent years, a few clinical trials have also examined the effects of using sevoflurane in electroconvulsive therapy (ECT). The objective of this study was to provide an up-to-date and comprehensive review on how the sevoflurane anesthesia affects seizure duration and circulatory dynamics, quality of seizure in ECT. We performed a meta-analysis of RCTs that investigated seizure duration and circulatory dynamics, quality of seizure in patients treated with ECT using sevoflurane (sevoflurane group) and other anesthetics (others group). A total of 11 RCTs (364 patients and 1343 ECT sessions) were included. The sevoflurane group showed a significantly shortened seizure duration during ECT compared to the others group [motor: 9 studies, SMD = -0.55, 95 % CI (-1.05, -0.06), $p = 0.03$; electroencephalogram: 8 studies, SMD = -0.85, 95 % C (-1.23, -0.47), $p < 0.00001$]. The heart rate was significantly increased in the sevoflurane group compared to the other group [8 studies, SMD = 0.36, 95 % CI (0.13, 0.58), $p = 0.002$]. There were no significant differences in the mean artery pressure or postictal suppression index between the two groups [mean artery pressure: 6 studies, SMD = 3.15, 95 % CI (-4.62, -10.92), $p = 0.43$; postictal suppression index: 3 studies, SMD = 0.12, 95 % C (-0.14, 0.38)]. These results suggest that, in ECT, sevoflurane can be used for patients in whom intravenous anesthesia is not feasible, although particular attention to circulatory dynamics is required.