Prophylactic Esmolol Infusion for the Control of Cardiovascular Responses to Extubation after Intracranial Surgery

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Abstract

Introduction*: Emergence from general anaesthesia and extubation are often accompanied by significant surges in heart rate and blood pressure. To document these changes and the efficacy of low-dose beta-blocker infusions in ameliorating these rises, we undertook a descriptive dose-ranging study comparing the use of esmolol to placebo in patients emerging from neuro-anaesthesia. *Materials and Methods*: Thirty-six patients undergoing intracranial surgery were randomised to receive saline, esmolol 100 µg/kg/min or 200 µg/kg/min infusions. The number of patients developing severe hypertension or tachycardia in each group was compared using Fisher's exact test. *Results*: Systolic blood pressure (SBP) and heart rate (HR) increased in all 3 groups during emergence and peaked at extubation. The proportion of patients with severe tachycardia or hypertension was reduced from 92% in the placebo group to 40% (P = 0.02) and 8% (P = 0.001) in the low and intermediate dose esmolol groups, respectively. Results were better in the intermediate dose group but the difference was not statistically significant. Two patients from the esmolol infusion groups required supplemental medication for bradycardia. *Conclusion*: Severe hypertension or tachycardia occurs in 92% of patients during extubation following neuro-anaesthesia and warrants the consideration of routine prophylaxis. Prophylactic esmolol infusion for the control of haemodynamic disturbances during extubation is feasible and safe. A modest level of obtundation is evident at 100 µg/kg/min but a rate of 200 µg/kg/min may prove to be more effective.

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