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A Comparison of Dexmedetomidine and Propofol in Patients Undergoing Electrophysiology Study

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Abstract

Background: Dexmedetomidine provides profound levels of sedation without affecting cardiovascular and respiratory stability based on its pharmacological profile. It may be a valuable sedative for procedures with minimal to mild pain. Electrophysiology study (EP study) is a mildly painful procedure that requires conscious sedation. The authors hypothesized that dexmedetomidine would cause lower respiratory and cardiovascular depression than propofol during equal sedation level in an electrophysiology study.

Material and Method: The present study protocol was approved by the clinical research ethics committee at Ramathibodi Hospital. Thirty-four patients were randomly allocated into two groups to receive either dexmedetomidine or propofol for an electrophysiology study. Patients in the dexmedetomidine group received a loading dose of dexmedetomidine (0.5 mcg/kg) infused over 10 minutes followed by 0.4 mcg/kg/h. Each patient in the propofol group received propofol 1mg/kg over 10 minutes followed by 3mg/kg/h. All patients received pethidine (0.5 mg/kg) before the initiation of EP study. Sedation was determined using the Modified Observer's Assessment of Alertness/Sedation (MOAA/S). The Modified Observer's Assessment of Alertness/Sedation scores, hemodynamic and respiratory variables were recorded regularly during the EP study.

Results: Thirty-four patients were enrolled in the present study. The Modified Observer's Assessment Alertness/Sedation values were similar in both groups. Respiratory rate values with dexmedetomidine were significantly higher than those in the propofol group ($p = 0.048$) and the oxygen supplement in the dexmedetomidine group were significantly lower than those in the propofol group ($p < 0.001$). Moreover, mean arterial blood pressure values of dexmedetomidine at the five and 15-minute were significantly higher than those of the propofol group ($p = 0.024$). No incidence of severe bradycardia or hypotension was found in both groups.

Conclusion: The present study demonstrated that comparable sedation could be achieved by a combination of pethidine with either dexmedetomidine or propofol during EP study. Dexmedetomidine group provided more hemodynamic and respiratory stability than propofol group.

Keywords: Dexmedetomidine, Propofol, Electrophysiology study

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