Evaluation of Effectiveness, Safety and Satisfaction of Narcotrend EEG Controlled Sedation with Dexmedetomidine *vs.* Propofol in Patients Undergoing Elective Colonoscopy Procedure

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Introduction. Colonoscopy, like many other diagnostic and therapeutic procedures, may be associated with discomfort. Although some patients can tolerate colonoscopy without any sedation and analgesics requirements, it is a distressful procedure for most patients. As a result different techniques have been developed to limit discomfort. Propofol is a powerful sedative that has gained the role as the "gold standard" for moderate to deep procedural sedation because of its rapid onset and offset of action, but its most important disadvantage is the risk of rapidly induced deep sedation, with possibitly to respiratory depression or airway obstruction. Dexmedetomidine possesses anxiolytic, sedative and analgesic properties without respiratory side-effects, making it theoretically an ideal sedative agent for cololonoscopy procedures.

Aim, Materials and Methods. The aim of the study is to evaluate the effectiveness, safety and patients' satisfaction of sedation with dexmedetomidine versus sedation with propofol during elective colonoscopy procedure.

72 patients ASA I–III scheduled for elective colonoscopy, included in a prospective study, were randomly assigned into 2 groups of 36 to receive either dexmedetomidine (D) (1 μg/kg initial loading dose for 10 min, followed by a maintenance infusion rate of 0.2–0.6 μg/kg/h) or propofol (P) (TCI 2–6 μg/ml, using Schnider Effect Site pharmacokinetic model). Rescue analgesics were used by procedure needs. Procedure sedation levels were targeted to achieve a Narcotrend index score of 65–79 (light anesthesia).

Results. In D group, mean age of patients was 57.2 ± 16.8 years, in P group – 63.0 ± 15.0 years. In D group, heart rate (HR) after 10 min decreased from 74.8 ± 12.0 to 59.8 ± 9.1 ×/min ($p < 0.01$), systolic blood pressure (SBP) – from 143.1 ± 23.3 to 121.7 ± 20.7 mmHg ($p < 0.01$), diastolic blood pressure (DBP) – from 71.1 ± 12.1 to 64.3 ± 12.0 mmHg ($p < 0.01$), bradycardia required for atropine developed in 8/36 patients, 6/36 had hypotension treated with i/v fluid.

In P group, HR after 10 min decreased from 80.2 ± 13.6 to 68.7 ± 12.1/min ($p < 0.01$), SBP – from 142.2 ± 30.4 to 110.7 ± 23.7 mmHg ($p < 0.01$), DBP – from 70.6 ± 13.0 to 60.1 ± 12.4 mmHg ($p < 0.01$). Bradycardia required for atropine developed in 1/36 patients, 3/36 had hypotension treated with i/v fluid.

All patients in both groups had spontaneous breathing during all procedure, no patient required bag-mask ventilation or any airway device. In D group 7/36 patients required O2 supply *vs.* 25/36 in P group. A jaw thrust maneuver had to be applied in 10/36 in propofol group, but a jaw thrust maneuver was not required in dexmedetomidine group.

In D group, 36/36 patients required rescue analgesics *vs.* only 1/36 in P group. 94 % patients in group P were satisfied or highly satisfied with received sedation, but only 47 % patients in group D were satisfied or highly satisfied.

Conclusions. To reach a sedation level sufficient to facilitate the tolerability of the procedure rescue analgesics were required to all patients sedated with dexmedetomidine vs. for only one patient sedated with propofol.

1. Propofol sedation associated more frequently with respiratory depression than dexmedetomidine sedation.
2. Sedation with dexmedetomidine cause more frequently bradycardia than sedation with propofol.
3. Patients sedated with dexmedetomidine had longer discharge time from hospital than patients sedated with propofol.
4. Dexmedetomidine sedation was less satisfactory for patients than sedation with propofol.