A Prospective, Randomized and Controlled Trial on the Effect of Deep Neuromuscular Blockade During Transurethral Resection of Bladder Cancer on Surgical Condition: Comparison with Moderate Neuromuscular Blockade: A Preliminary Result

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Introduction: Transurethral resection of the bladder tumor (TURB) for bladder tumor excision is the mainstream treatment and is frequently performed under general anesthesia. Neuromuscular blockade is needed for intubation and optimal surgical condition via obturator nerve block during general anesthesia for TURB. We hypothesized that deep NMB and the use of sugammadex as a reversal agent may be associated with better endoscopic surgical condition compared with moderate NMB during TURB. This study was designed to compare patients with deep neuromuscular blockade (NMB) with moderate NMB during transurethral resection of the bladder tumor (TURB) in terms of surgical condition.

Method: This single center, randomized, controlled, double-blinded, and parallel design study included patients aged more than 18 years who are American Society of Anesthesiologists (ASA) physical status I and II and scheduled to undergo elective TURB. A total of 33 patients undergoing elective TURB are randomized to either moderate NMB (n=17) or deep NMB (n=16). A TOF monitoring is applied to monitor the response of the orbicularis oculi muscle and patients in moderate neuromuscular blockade are reversed with 2 mg/kg sugammadex at a TOF count of 1 or 2 and patients in the deep neuromuscular blockade are reversed with 4 mg/kg sugammadex at PTC of 2. At the end of the operation, the surgeon rated the surgical condition on a 5-point scale (1 = extremely poor, 2 = poor, 3 = acceptable, 4 = good, 5= optimal).

Result: There were statistically significant differences in surgical condition between the two groups (P < 0.001). Fourteen patients (88%) in deep NMB group showed optimal surgical condition whereas 2 patients (12%) in moderate NMB group showed optimal surgical condition.

Conclusion: Deep neuromuscular blockade improved endoscopic surgical condition compared with moderate neuromuscular blockade in patients with TURB.