

Nöroleptik Malign Sendromlu Hastada Elektrokonvulzif Tedavisinde Rokuronyum ve Sugammadex Kombinasyonu Rocuronium and Sugammadex Combination for Management of Electroconvulsive Therapy in a Patient with Neuroleptic Malignant Syndrome

Şaban Yalçın¹, Harun Aydoğan¹, Ahmet Küçük¹, Hasan Hüsni Yüce¹, Tekin Bilgiç²,
Mahmut Alp Karahan¹

¹Harran Üniversitesi Tıp Fakültesi Anesteziyoloji ve Reanimasyon Anabilim Dalı, Şanlıurfa

²Sağlık Bakanlığı Mehmet Akif İnan Eğitim ve Araştırma Hastanesi, Anesteziyoloji ve Reanimasyon
Kliniği, Şanlıurfa

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Corresponding Author: Dr. Mahmut Alp Karahan,

Department of Anesthesiology and Reanimation, Harran University Faculty of Medicine, Şanlıurfa,
TURKEY.

Telephone Number:+905327808997 E-mail: mahmutalp_k@yahoo.com

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Dear Editor;

Neuroleptic malignant syndrome (NMS) is a relatively rare, unpredictable, and potentially fatal complication caused by neuroleptics and other drugs that affect dopaminergic transmission. The syndrome is characterized by mental status changes, muscle rigidity, hyperthermia, autonomic dysfunction, leukocytosis and elevation of Creatine Kinase (CK)

level. NMS includes some clinical similarities with malignant hyperthermia (MH), therefore anesthetic management is important (1). We want to report successful anesthesia managements of a patient undergoing four electroconvulsive therapy (ECT) sessions for treatment of NMS with rocuronium and sugammadex combination.

A 23-year-old male, of weight 50 kg, with a history of bipolar mood disorder was admitted to hospital with high fever, muscle rigidity, inability to urinate, unconsciousness, muscle aches and stiffness. He had been taking the lithium for a period of 5 months prior to hospital admission. Patient presented with; fever: 38,5°C, blood pressure 135/86 mm Hg, heart rate 105 beats/min, and respiratory rate 22/min. The laboratory analysis revealed CK: 2886 U/L and leukocyte result was 19700/mm³. Performed to rule out other pathologies electrocardiogram and computed tomography of the brain were normal. The patient hospitalized in the intensive care unit with the diagnosis of NMS. Patient was monitored and all of the medications in use were discontinued. Cold applications and peripheral oxygen by

face mask (2-4 l/min) administration was begun. He was started with bromocriptine 7.5 mg/day in divided doses. After 7 days, due to the normalization of clinical and laboratory findings, patient was admitted to the psychiatric ward. In addition to drug therapy four sessions ECT was planned. All ECT procedures were performed in the operating room with standard monitoring. Anaesthesia was induced with propofol (1 mg/kg) and rocuronium (0.6 mg/kg). The patient was hyperventilated by face mask with 100% O₂. Two minutes after the administration of rocuronium and deep blockade confirmed with a neuromuscular monitor, the ECT stimulus was applied and it produced an ensuing seizure. Following the end of the convulsion completely sugammadex 8 mg/kg resumed spontaneous breathing and eye opening was seen in 5 minutes. The patient was hemodynamically stable and ECT was performed safely and effectively in all treatments.

Although NMS and MH result from different pathophysiological mechanisms, they have some common clinical features. Electroconvulsive therapy used to in the treatment of psychotic symptoms with NMS. Succinylcholine (SCC) is usually used muscle relaxant to reduce the muscle contractions and minimize injury and pain associated with ECT. However, even small dose of SCC can produce side effects such as myalgia, hyperthermia and hyperkalemia (3). NMS and malignant hyperthermia, the possibility that patients with a history of NMS may be vulnerable to developing malignant hyperthermia is an important factor when considering general anaesthesia, especially succinylcholine administration immediately before electrical stimulation for ECT (2). Therefore, an ultra-short-acting non depolarizing muscle relaxant would be an alternative addition. Rocuronium is a non- depolarizing neuromuscular blocking drug and has a specific reversal agent, sugammadex. At a dose of 0,9-1,2 mg/kg onset time of rocuronium has been shown to be similar to that of

SCC. Sugammadex can easily and rapidly reverse profound neuromuscular block at doses greater than 2mg/kg (4). Kadoi et al. compared recovery times from rocuronium-induced muscle relaxation after reversal with three different doses of sugammadex with succinylcholine during ECT. They specified that 8 mg/kg sugammadex produces equally rapid recovery from rocuronium muscular relaxation compared with spontaneous recovery from 1 mg/kg SCC during ECT (5).

We submit that the combination of rocuronium and sugammadex offers a serious alternative to succinylcholine in patients with neuroleptic malignant syndrome for ECT.

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