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Tremor and Other Hyperkinetic Movements

Video Abstracts

Acute Dystonic Reaction Following General Anesthetic Agent Use

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Abstract

Background: A 36-year-old Thai female who underwent a thymectomy under general anesthesia developed acute abnormal movements in the craniofacial region immediately after awakening with preserved consciousness.

Phenomenology: Intermittent abnormal movements included oculogyric crisis; tongue protrusion; blepharospasm; and oro-mandibular dystonia consisting of risus sardonicus, jaw opening, and right torticollis.

Educational value: An acute dystonic reaction can be a complication of either single or combined general anesthetic agents.

Keywords: Acute dystonic reaction, general anesthesia, oculogyric crisis

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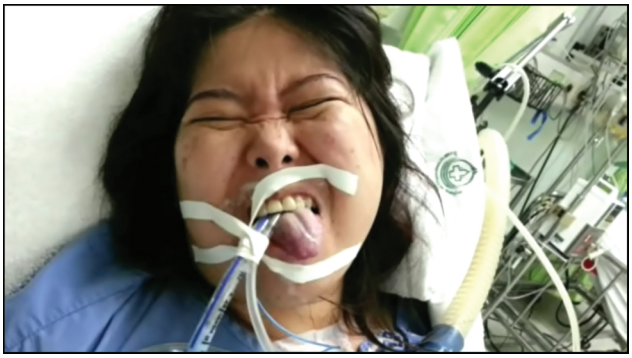
Ethics Statement: All patients that appear on video have provided written informed consent; authorization for the videotaping and for publication of the videotape was provided.

Case summary

A 36-year-old Thai female was recently diagnosed with generalized myasthenia gravis associated with thymoma. Her acetylcholine receptor antibody level was 16.78 nmol/L (normal: <0.45 nmol/L). The patient was treated with oral pyridostigmine and prednisolone and was scheduled for an elective thymectomy. Unfortunately, the patient experienced a myasthenic crisis 3 days before admission for surgery. Physical examination in the emergency department revealed respiratory distress, swallowing difficulty, bilateral ptosis, limited extraocular movement in all directions of the right eye, bilateral facial weakness, and generalized proximal muscle and neck muscle weakness (Medical Research Council [MRC] grade III). The patient was intubated, and intravenous immunoglobulin (IVIg) was administrated. One week after receiving IVIg, the patient could be extubated, and her motor power markedly improved (MRC grade V). The patient subsequently underwent thymectomy under general anesthesia including nitrous oxide, sevoflurane, fentanyl, and thiopental. The operation was uneventful. However, 1 hour after awakening with preserved consciousness, she developed intermittent abnormal movements consisting of oculogyric crisis; tongue protrusion; blepharospasm; and oro-mandibular dystonia comprising risus sardonicus, jaw opening, and right torticollis (Video 1, Segment 1). All abnormal movements occurred spontaneously and involuntarily. No abnormal extremity movements were detected. Physical examination showed that her vital signs and cardiovascular system were normal. Complete blood count and blood chemistry including electrolytes, blood sugar, and thyroid function and kidney function tests were unremarkable. She was diagnosed with an acute dystonic reaction (ADR) due to general anesthetic agents either single or combined (nitrous oxide, sevoflurane, and fentanyl). Because intravenous anticholinergics were unavailable in our hospital, she was given an intravenous benzodiazepine. She was successfully treated with a single 10-mg dose of intravenous diazepam (Video 1, Segment 2). ADR did not recur during her hospital course or at the 1- or 6-month follow-ups.

Discussion

We report an apparent case of ADR in the patient who was exposed to multiple general anesthesia agents. General anesthesia-induced ADR is relatively rare compared to complications following the use of



Video 1. Segment 1. Phenomenology of the Patient. Immediately after awakening with preserved consciousness, the patient developed intermittent abnormal movements consisting of oculogyric crisis; tongue protrusion; blepharospasm; and oro-mandibular dystonia including risus sardonicus, jaw opening, and right torticollis. All abnormal movements occurred spontaneously and involuntarily. **Segment 2: Outcome After Treatment.** The symptoms were successfully treated with a single 10-mg dose of intravenous diazepam.

dopamine-blocking agents such as typical and atypical antipsychotics or antiemetics. Propofol has been well described as an ADR-causing anesthetic agent in many reports. However, there are few reports of ADR associated with nitrous oxide,[1] sevoflurane,[1] and fentanyl,[2] which were the agents administered to our patient. The possible mechanism of ADR due to these anesthetic agents may be explained by an imbalance between dopaminergic and cholinergic neurotransmission in the basal ganglia circuit.[3] Treatment options are anticholinergics such as diphenhydramine, benztropine, and procyclidine, and benzodiazepines such as diazepam and midazolam. One report proposed that naloxone might be useful for minimizing dystonic symptoms in opioid-induced ADR.[2]

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