Ketamine Sedation of Case with Unknown Posterior Fossa Tumor

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Introduction

Ketamine is frequently preferred intravenous (iv) anesthetic agent because it provides minimal respiratory depression and powerful analgesia. Ketamine should not be used alone or without taking other precautions for patients with intracranial pathologies since it also has cerebral vasodilator effects and increases blood flow and oxygen consumption (1).

Posterior fossa tumors represent 45-60% of the central nervous system tumors in childhood. Masses in this region can compress the brain stem or lead to compression by pushing up the tentorium. The symptoms are linked to increased intracranial pressure (ICP) or hydrocephalus as an interruption in the cerebrospinal fluid can cause confusion in these patients (2). In this paper, we present the case of a patient with an unknown posterior fossa tumor who did not recover after ketamine administered for sedation.

Case

A 6-year-old boy weighing 18 kg was referred to our hospital for emergency intracranial mass operation. Physical examination of the patient showed poor general condition. Glasgow coma scale (GCS) score was 4, blood pressure- 110/64 mmHg, pulse- 93/min, and pulse oximeter was 98%. Natural respiratory sounds and rhythmic heart beats were noted. Cranial computed tomography showed a 4.7x4 cm hyperdense mass in the cerebellum lateralized to the right of the midline; the 4th ventricle could not be imaged. Emergency intracranial mass excision was planned. According to the epicrisis report, the patient had a history of fatigue, headache, and nausea-vomiting 15 days ago; after complaints had resolved, the patient was taken for circumcision at another hospital under elective conditions with American Society of Anesthesiologists physical status class I. After routine monitoring, 2 mg midazolam and 2 mg/kg ketamine iv were administered
and the vital signs were stable during the operation. In the recovery period, the patient was sleepy, when his GCS score regressed to 11, cranial tomography was taken which showed a cerebellar mass, and the patient was referred to our hospital. Emergency posterior fossa surgery was planned. Electrocardiogram, pulse oximetry, heart rate, noninvasive arterial blood pressure, and end-tidal carbon dioxide (ETCO₂) monitoring was done in the patient who underwent emergency posterior fossa surgery. Anesthesia was induced with iv lidocaine 1 mg/kg, propofol 2.5 mg/kg, fentanyl 1 µg/kg, and rocuronium 0.6 mg/kg and was maintained with 2% sevoflurane in 50% air and oxygen and remifentanil infusion. We preferred controlled mechanical ventilation for our patient. Intraoperative vital signs were stable, appropriate fluid and blood replacement and brain edema treatments were administered. The operation was uneventful. After the operation, the patient was taken to the intensive care unit with a GCS of three while still being intubated. Monitored on a ventilator, the patient was exitus on the postoperative day 11.

Discussion

Ketamine is a sedative-hypnotic agent with potent analgesic properties (3). It is used for sedation and analgesia in induction of general anesthesia and perioperative period. Under appropriate sedation with controlled ventilation conditions, ketamine does not increase ICP; however, when given at 2 mg/kg or above in awake children and adults, it increases ICP and, especially, if there is high ICP this increase is more pronounced. These patients have effective respiration as ETCO₂ and mean arterial pressure.

In our case, midazolam administered with ketamine possibly depressed the respiratory response to CO₂ in the postoperative period, with the increase in partial carbon dioxide pressure contributing to secondary ICP increase.

Conclusion

We believe that the complaints of our patient 15 days before admission were secondary findings of increased ICP. Before administration of ketamine for sedation, preoperative evaluation should definitely include complete cranial nerve examination and questioning patients about symptoms that may be caused by increased ICP.

Ethics

Informed Consent: Consent form was filled out by all participants.

Peer-review: Externally peer-reviewed.

Authorship Contributions


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