

Anesthetic Challenges in a Case of Oligodendroglioma for Tumor Excision

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Abstract: *Oligodendrogliomas are rare primary brain tumors, often presenting with seizures. Their anesthetic management poses challenges due to concerns regarding intracranial pressure (ICP), cerebral perfusion, and seizure control. A 54 - year - old female with a history of oligodendroglioma presented with recurrent seizures. MRI confirmed a right frontal lobe grade 2 oligodendroglioma. Despite antiepileptic therapy, she continued to have refractory seizures. Surgical excision was planned under general anesthesia. Dexmedetomidine infusion was initiated preoperatively to control ICP. Anesthesia was induced with thiopentone sodium, and intraoperative management focused on maintaining hemodynamic stability and optimizing cerebral perfusion. The procedure was uneventful, and the patient had a smooth postoperative recovery. This case highlights the importance of meticulous anesthetic planning, including seizure control and ICP management, to optimize outcomes in patients undergoing surgery for oligodendrogliomas.*

Keywords: oligodendroglioma, brain tumor, seizures, intracranial pressure, neuroanesthesia, thiopentone sodium, dexmedetomidine, cerebral perfusion, refractory seizures, neurosurgery.

1. Introduction

Oligodendrogliomas are a rare type of brain tumor that develops from glial cells called oligodendrocytes. It constitutes approximately 5% of primary intracranial tumors. Oligodendrogliomas are mostly found in the frontal lobe of the cerebrum.

There are 2 grades of oligodendrogliomas:

- grade 2 (low grade), sometimes called diffuse
- grade 3 (high grade), sometimes called anaplastic

The most common sign of an oligodendroglioma is a seizure.

Occasionally patients will have focal neurological deficits based on tumor location. Grade III anaplastic OG is a more malignant form of the tumor that portends a less favorable prognosis and may occur de novo or as degeneration from the lower grade OG.

2. Case Report

A 54 - year - old female presented with complaints of involuntary movements of the left upper limb for 15 days. History of up rolling of eyes, frothing from mouth present.

Patient had similar episodes 4 years ago, for which patient was evaluated for the same and was diagnosed to have oligodendroglioma on MRI. Patient was on T. Carbamazepine 300 mg BD and T. Clobazam OD, GPE, systemic, and airway examinations were normal. All routine investigations done were normal.

MRI brain showed Irregular lobulated mass lesion (5.8 x 3.9 x 4.4 cm) noted in right frontal lobe, focal calcification suggestive of grade 2 oligodendroglioma. EEG was normal.

Neuro - physician opinion was taken in view of refractory seizures for which patient was started on Inj. LEVIPILL 750 mg BD, Inj. VALPROATE 500 mg BD. A tumor excision was planned, and the case was accepted under ASA 3. In the preoperative area, the patient had an active seizure and was given Inj. LEVIPILL 500 mg stat. Patient was started on Inj. DEXMEDETOMIDINE 1mcg/hr. IV infusion preoperatively to maintain the ICP for the surgery. Patient was shifted to OT, all standard ASA monitors connected, intubated with 7.0 mm - size cuffed oral ETT using inj. Thiopentone sodium as an induction agent, and right subclavian CVC 7 Fr was secured. The intraoperative patient was maintained with adequate analgesia and muscle relaxants. Intraoperative was uneventful; the patient was extubated and shifted to post - op.



3. Discussion

The major goals of anesthetic management in this case are to (a) optimize cerebral perfusion and oxygenation and (b) maintain low intracranial pressure (ICP).¹ Respiratory depression associated with the administration of sedatives and opioids may lead to high levels of PaCO₂ and further increase the ICP; hence, they were avoided. Manipulation of a tumor may cause hypertension/bradycardia or hypotension/tachycardia which was maintained with adequate muscle relaxation and analgesia.² Bleeding is a major concern if ICP is increased; hence, it was maintained with adequate fluid administration and a modest degree of hypothermia was maintained. Facial edema and damage to the eyes are major concerns, and careful positioning of the patient was done.

4. Conclusion

The anesthetic management of patients undergoing surgical treatment for tumors involving the CNS represents a unique challenge. This case report shows thorough preoperative evaluation and neurological monitoring under general anesthesia without postoperative complications.

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