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Original Research Paper

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GENERALISED TONIC–CLONIC SEIZURE FOLLOWING PROPOFOL INDUCTION IN A HEALTHY ADULT: A CASE REPORT

Dr. Ankit Pokharel Department of Anesthesiology, KVG Medical College, Sullia

Dr Beena Rani C Department of Anesthesiology, KVG Medical College, Sullia

ABSTRACT **Background and Aims:** Propofol is widely used for induction of anaesthesia because of its rapid onset and favourable recovery. Despite known anticonvulsant properties, paradoxical seizure-like phenomena (SLP) have been reported rarely. We report a case of propofol-induced generalised tonic–clonic seizure in a healthy adult. **Case Report:** A 33-year-old male with no comorbidities underwent induction of general anaesthesia with intravenous propofol 100 mg for elective rectopexy. Immediately after administration, he developed generalised tonic–clonic movements lasting 20–30 seconds while remaining haemodynamically stable. The episode was terminated with intravenous midazolam 2 mg. Anaesthesia was continued uneventfully, and the patient had no postoperative neurological sequelae. **Conclusion:** Propofol may rarely precipitate seizure-like activity even in patients without neurological disease. Prompt recognition and benzodiazepine therapy allow safe continuation of anaesthesia.

KEYWORDS : Propofol, Seizure-Like Phenomenon, General Anaesthesia, Induction, Myoclonus

INTRODUCTION

Propofol is a commonly used intravenous induction agent because of its rapid onset, short duration, and favourable recovery profile. It primarily acts through potentiation of gamma-aminobutyric acid (GABA_A) receptor activity and is generally considered anticonvulsant. However, paradoxical neuroexcitatory effects including myoclonus, opisthotonus and seizure-like phenomena (SLP) have been reported in both epileptic and non-epileptic patients.[1,2]

Although uncommon, such events during induction can create significant intraoperative concern. We describe a case of generalised tonic–clonic seizure immediately following propofol induction in a previously healthy adult.

Case Report

A 33-year-old male with complete rectal prolapse was scheduled for elective rectopexy under general anaesthesia. He had no known medical comorbidities. The patient was a chronic smoker and reported regular alcohol consumption for five years. There was no history of seizures, head injury or neurological illness. Pre-anaesthetic evaluation and laboratory investigations were within normal limits.

In the operating room, standard monitoring (electrocardiogram, non-invasive blood pressure and pulse oximetry) was instituted. After preoxygenation, anaesthesia was induced with intravenous propofol 100 mg administered as a bolus.

Immediately following administration, the patient developed generalised tonic–clonic seizure activity lasting approximately 20–30 seconds. Oxygen saturation and haemodynamic parameters remained stable during the episode. The seizure was promptly terminated with intravenous midazolam 2 mg.

Following stabilisation, neuromuscular blockade was achieved with succinylcholine and the trachea was intubated uneventfully. Anaesthesia was maintained as planned. The intraoperative course was smooth.

Postoperatively, the patient was fully conscious and oriented with no focal neurological deficits or recurrence of seizure activity during hospital observation.

DISCUSSION

Propofol is widely regarded as a central nervous system depressant with anticonvulsant properties; however, excitatory phenomena have been documented across all phases of anaesthesia.[1,3] Recent literature continues to recognise propofol-associated myoclonus and seizure-like activity as uncommon but clinically relevant adverse effects.[2,4]

Mechanism

The exact mechanism of propofol-induced SLP remains unclear. Proposed mechanisms include:

- Transient imbalance between inhibitory and excitatory neuronal pathways
- Subcortical disinhibition
- Rapid fluctuations in brain propofol concentration
- Individual susceptibility

A systematic review noted that SLP may occur during induction, emergence or early recovery, suggesting a relationship with changing cerebral propofol concentrations.[1] More recent analyses also support cortical or subcortical reflex mechanisms for propofol-associated myoclonus.[4]

Rapid bolus administration has been implicated as a possible precipitating factor due to abrupt peak brain concentrations.[3]

Differential Diagnosis

Important differentials include true epileptic seizure, hypoxia, metabolic derangements, local anaesthetic toxicity and alcohol withdrawal. In the present case:

- Oxygen saturation remained normal
- Preoperative metabolic parameters were normal
- There was no prior seizure history
- No other proconvulsant drugs were used

The tight temporal association with propofol strongly supports drug-induced SLP.

Risk Factors

Reported risk factors include young age, rapid intravenous bolus and possible individual susceptibility.[1,2] Chronic alcohol use may alter neuronal excitability, although evidence is limited.

Management

Most propofol-induced SLP episodes are brief and self-limiting. Recommended management includes:

- Ensuring airway patency and oxygenation
- Administration of benzodiazepines
- Proceeding with anaesthesia once stabilised

Benzodiazepines remain first-line therapy for drug-induced seizures.[3] In our patient, midazolam promptly terminated the episode and surgery proceeded uneventfully.

Clinical Implications

Anaesthesiologists should recognise that propofol, despite anticonvulsant properties, can paradoxically produce seizure-like activity. Awareness prevents unnecessary abandonment of surgery and guides appropriate management. Most cases have a benign course without neurological sequelae.[2,4]

CONCLUSION

Propofol-induced seizure-like phenomenon is a rare but recognised complication that may occur in otherwise healthy individuals. Prompt recognition and treatment with benzodiazepines permit safe continuation of anaesthesia. Vigilance during induction remains essential.

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