



AN EVENT OF UNDIAGNOSED INTRAOPERATIVE HYPERTENSION - STILL A NIGHTMARE - SUSPENSE CONTINUES ...A CASE REPORT

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ABSTRACT Intraoperative events are not uncommon to any anesthesiologist. For every case inside the operating room, some major or minor events always occur related to patient, surgery, or anesthesia. Managing such events depends on the skill and experience of the anesthesiologist. When it becomes unmanageable due to undiagnosed and unanticipated conditions, it creates a “tug of war” situation inside the operating room. So, screening of such unidentified undiagnosed conditions is an essential aspect of the pre-anesthesia check-up. Unfortunately, sometimes due to asymptomatic presentations in non-stress conditions, it becomes difficult to screen them before surgery. We describe such an event of an intraoperative hypertensive crisis that remained undiagnosed before and after surgery leading to continuing suspense.

KEYWORDS : Intraoperative events, hypertensive crisis, anesthetic events, pheochromocytoma, thyroid storm

INTRODUCTION

Intraoperative events are not uncommon to any anesthesiologist. Timely identification and management of such events depend on the skill and experience of the anesthesiologist. Such events include extreme fluctuations in the hemodynamic parameters (bradycardia, tachycardia, hypertension, or hypotension) that may lead to cardiorespiratory arrest. These events occur due to patient-related causes, anesthesia-related or surgery-related causes.

Most of the time, they are manageable successfully, but when the cause of such an event remains unidentified, it creates a havoc situation inside the operating room. This case report describes a similar incident happened in our institution during ongoing spine tumor surgery.

CASE STUDY

A 65-year-old healthy female (without any comorbid illness) diagnosed with T4–T5 intradural extramedullary tumor, multilevel thoracic ossification of ligamentum flavum, L2 pseudoarthrosis, and grade 1 degenerative listhesis of L4-S1 with right radiculopathy and neuro deficit. She was scheduled for excision of intradural extramedullary tumor at T4–T5 level with neuromonitoring. Her pre-anesthesia check-up was largely insignificant except for the history of coronavirus disease one month prior, from which she recovered completely. On the day of surgery, her routine examinations (general and systemic) and blood investigations were within normal limits. The patient provided consent for the surgery and later for the publication of this report.

On the day of surgery, her vital parameter included a heart rate of 70 beats/minute, blood pressure of 128/78 mm of Hg, and SPO₂ of 98% on room air. All standard monitors (ECG, noninvasive blood pressure, SPO₂) were applied inside the operating room. She was premedicated with intravenous ondansetron 4mg, fentanyl 2mcg/kg, and lignocaine 1.5mg/kg. The general anesthesia was administered using intravenous propofol 2mg/kg and atracurium 0.5 mg/kg. The patient was intubated with a 7-mm cuffed endotracheal tube. Additionally, an arterial line, neuromonitoring leads, and bispectral index (BIS) monitoring leads were applied. Finally, the patient was turned in a prone position using padded bolsters. Hemodynamic parameters remained stable throughout this process.

Intraoperatively, an intravenous target-control infusion of propofol started to maintain the depth of anesthesia. Multimodal analgesia provided using intravenous paracetamol 1 gm, ketorolac 30 mg, dexamethasone 8 mg, and dexmedetomidine 15 mcg. Approximately one hour after induction, during the surgical dissection of the tumor, a sudden rise in blood pressure from 110/80 mmHg to 150/90 mmHg was noted without any change in heart rate. Quick measures initiated to identify and tackle usual causes like inadequate depth of anesthesia,

inadequate analgesia, displaced endotracheal tube, monitoring artifacts, and readjustment of bolsters to ensure a free abdomen. In addition, we also tried pharmacological measures to control blood pressure like stepping up the propofol infusion, giving boluses of intravenous morphine (0.15 mg/kg), esmolol (0.5mg/kg), and labetalol (20mg). Despite all efforts, the blood pressure remained persistently high. Within 15 minutes, it reached 200/110 mmHg with a heart rate of 70–80 beats/min which resulted in a bloody surgical field, due to which the surgery was halted. Finally, an intravenous infusion of nitroglycerine was started and titrated till blood pressure returned to preoperative values allowing resumption of the surgery. However, immediately following excision of the tumor, the requirement of nitroglycerine dropped till parameters remained normal even after stopping the infusion. The hemodynamic parameters remained stable without any pharmacological assistance until the end of the surgery.

Postoperatively, the patient was kept on elective ventilation due to delayed recovery with inadequate spontaneous respiratory attempts during emergence from the anesthesia. Later, she was extubated the next day uneventfully. Upon further investigating the possible missed causes of intraoperative hypertension [Figure 1], a contrast-enhanced computerized tomography scan of the abdomen revealed mild left adrenal enlargement. We also analyzed 24-hour urine vanillyl mandelic acid (VMA) levels with the suspicion of pheochromocytoma, which were insignificant. Her postoperative thyroid profile was within normal limits. Intraoperative tumor biopsy revealed grade 1 meningothelial meningioma. The postoperative period remained uneventful with stable hemodynamics till the discharge of the patient.



Figure 1: Various causes of intraoperative hypertension**DISCUSSION:**

Intraoperative hypertension can have disastrous complications if left untreated. The sudden rise in blood pressure could be due to various common physical (tube or position related), physiological (depth of anesthesia, pain, fever, and hypothermia), and uncommon pathological causes (catecholamine secreting tumor, pheochromocytoma, paraneoplastic tumors, or hyperthyroid).

In our case, the transient uncontrolled intraoperative hypertension during tumor handling raises suspicion of many conditions related or unrelated to the tumor. Either it could be the secondaries of any hormone-secreting tumor or primary arising from the sympathetic system. Secretion of excessive hormones (epinephrine, norepinephrine, dopamine, and others), especially during tumor handling or stress response during surgery, can lead to potentially disastrous and life-threatening complications. Initially, we suspected a diagnosis of pheochromocytoma due to severe hemodynamic fluctuations in our case. Moreover, selective hypertension without change in the heart rate suggests the condition associated with severe vasoconstriction primarily due to the release of endogenous sympathomimetic agents like vasopressin. In spite, a baseline investigation did not reveal any such conditions.

The differential diagnoses of intraoperative hypertension [Figure 1] in spine surgery may include pheochromocytoma, autonomic dysreflexia, paraganglioma, thyroid storm, malignant hyperpyrexia, prone position (excess intra-abdominal pressure), and anesthesia-related causes. Many such conditions remain undiagnosed throughout life as they remain asymptomatic unless exposed to stressful conditions like surgery. Anesthetizing patients with such undiagnosed conditions can lead to life-threatening complications (like a hypertensive crisis, ischemic cardiomyopathy, tachyarrhythmias, or cerebrovascular accidents) that are sometimes refractory to regular medications. Hence, it is prudent to do a thorough pre-anesthetic evaluation to diagnose and control them before the surgery as best as possible. However, most of the time, it fails to do so due to asymptomatic presentation under normal circumstances.

For an event of intraoperative hypertension, it is imperative to gain symptomatic control while simultaneously investigating for the definitive cause. Unfortunately, since our patient was from a poor economic background, further expensive investigations could not be performed. If it was possible, investigations like plasma metanephrine/nor-metanephrine level, magnetic resonance imaging, and positron emission tomography (PET) scan might have been needed.

Thus, the exact culprit behind this event remained undiagnosed due to the asymptomatic presentation of such conditions preoperatively. An anesthesiologist may encounter many such known but undiagnosed conditions that may lead to unexpected and varied hemodynamic fluctuations during stressful conditions like surgery. Such transient, unanticipated, and potentially fatal intraoperative hemodynamic fluctuations will always remain a nightmare for an anesthesiologist.

REFERENCES:

NONE.