

Inadvertent Therapeutic Error Involving Spinal Anesthesia during Cesarean Section: A Case Report

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ABSTRACT

Aim: To emphasize that medication errors can jeopardize a patient's life, leading to increased morbidity and mortality.

Background: Safe and vigilant medical practice is key to patient safety, but still, in our country, nearly 5.2 million medical errors are happening annually. Medication errors in the operation room (OR), such as wrong labels, look like appearance and location of ampules, unlabeled syringes, lack of complete knowledge, poor communication, and careless, relaxed attitude, have contributed to patients' fatal outcomes. Major morbidities and mortalities have been reported following inadvertent intrathecal injection of tranexamic acid (TXA).

Case description: We report a case of accidental injection of TXA instead of bupivacaine during spinal anesthesia, leading to neurotoxicity and myoclonus complicated by cardiac arrhythmia. However, the timely, multidisciplinary intervention helped to save the mother and fetus.

Conclusion: Properly standardized drugs in the operating room, sensitization of working staff, proper training, and reading the drug label before use can minimize fatal therapeutic errors related to drugs. Early detection and timely resuscitation can reduce morbidity and mortality.

Clinical significance: A proper standardization of protocols with a strict emphasis on the right drug with proper administration is a must to avoid fatal mistakes endangering patients' life.

Keywords: Awareness, Cesarean section, Comorbidity, Intensive care unit.

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BACKGROUND

Tranexamic acid is a popular antifibrinolytic agent in gynecologic and obstetric surgeries to overcome the increased fibrinolytic activity associated with these procedures. The "Model List of Essential Medicines" by The World Health Organization (WHO) has included it in the list. It is strongly recommended for early intravenous use in clinically diagnosed postpartum hemorrhage cases following vaginal birth or cesarean section.¹

We report a case of an accidental and fatal administration of TXA instead of hyperbaric bupivacaine intrathecally in a pregnant woman posted for elective cesarean section due to the same appearance of both the ampules.

CASE REPORT

Thirty-two-year-old second gravida was referred to our center with extensive myoclonic jerky movements of lower limbs and severe pain in the gluteal region and back. The patient was posted for elective LSCS at a hospital for term pregnancy with a transverse lie. According to the treating doctor, her vitals were stable, and the pre-anesthetic check was normal. She developed intense backache and pain in the gluteal region 2 minutes after spinal anesthesia. Before cleaning and draping, she started having jerky movements of lower limbs and was very anxious. The whole procedure was aborted after the realization of inadvertent use of TXA injection intrathecally given during spinal anesthesia due to the similarity of both ampules as there was no motor and sensory block. The patient was immediately shifted to our center. On admission, the patient was conscious with jerky movements of lower limbs and was in severe pain. Her BP was 180/110 mm Hg, P/R was 118/minute, R/R was 34/minute, SpO₂ was 94%, and chest was clear. Heart sounds were audible with no added sounds. P/A was 34-week

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gravid uterus, and FHS was 185/minute. The patient was shifted to ICU with convulsions. She was treated with midazolam and MgSO₄, and Levacetam she was intubated with succinylcholine as convulsions refractory were to given drugs. The decision of immediate cesarean was taken as the fetus was alive. The condition of fetus and mother discussed with family, consent taken and the patient was shifted to OT. A single live baby in a flaccid state was delivered weighing 2.4 kg and was shifted to NICU. After the procedure, the patient was shifted back to ICU. The patient was stabilized on ventilator support and antihypertensive. However, after 3 hours, she developed tachycardia H/R—178/minute. ECG showed ventricular tachycardia. She was given bolus amiodarone followed by infusion after cardiologist consultation. Her heart rate started normalizing gradually. Within 48 hours, patient's condition improved; she was conscious with stable vitals. She was weaned

off the ventilator and supportive medication by the third day. Her MRI brain and echocardiography as advised by neurologist and cardiologist, did not show any pathological changes. She was shifted to the ward by day 6 and discharged on day 8 after stitch removal in a stable state. On subsequent follow-up, she did not have any sign of neurological and cardiac deficit.

DISCUSSION

Tranexamic acid competitively inhibits plasminogen activation and noncompetitively inhibits plasmin at higher concentrations. The effect of direct intrathecal administration of TXA is not very well understood. Inhibition of gamma-amino butyric acid (GABA) type A and glycine receptor at the postsynaptic site of spinal dorsal horn neurons increases excitability, causing severe gluteal and leg pain and myoclonus. Subsequently, inhibition of these receptors in the brain will cause cerebral vasoconstriction, ischemia, raised intracranial pressure (ICP), and generalized tonic-clonic convulsions. Centrally mediated massive sympathetic stimulation could lead to cardiovascular changes following intrathecal TXA.²

Accidental injection of intrathecal tranexamic acid is not uncommon. Wong et al. reported the first case of accidental intrathecal administration of TXA in an 18-year-old male posted for appendectomy with an uneventful outcome.

Firouzeh et al.³ reported an obstetric case; the patient was accidentally administered TXA intrathecally. Three minutes after the injection, the patient complained of sharp pain in the lower abdomen and became dysphoric. General anesthesia was induced, and the baby was delivered. Postoperatively, the patient developed tachyarrhythmia and severe jerking motions in her lower extremities consistent with seizure. The patient had a cardiac arrest which was refractory to resuscitation. Twenty-one cases of accidental spinal administration of TXA were reviewed by Patel et al.⁴ Seven lower segment cesarean section (LSCS), six orthopedic, and eight general

surgery cases were observed. Of them, 10 patients could not be saved, and the other 10 required intensive care admission for management of refractory convulsions and tachyarrhythmia. Our patient received an intrathecal injection of 160 mg TXA with a full recovery, unlike most reported cases of cesarean section. Timely realization of error and multidisciplinary intervention were the cornerstones for a favorable outcome in our patient. Aggressive management in the form of early intubation using muscle relaxants, anticonvulsants, antihypertensive, and anti-arrhythmic drugs was lifesaving in our patient.

To conclude, most of these errors were due to confusion between hyperbaric bupivacaine and TXA because of similarity in appearance. Properly standardized drugs in the operating room, sensitization of working staff, proper training, and reading the drug label before use can minimize fatal therapeutic errors related to drugs. Early detection and timely resuscitation can reduce morbidity and mortality.

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REFERENCES

1. Salhotra R, Tyagi A. Medication errors: they continue. *J Anaesthesiol Clin Pharmacol* 2019;35(1):1–2. DOI: 10.4103/joacp.JOACP_88_19.
2. Mohseni K, Jafari A, Nobahar MR, et al. Polymyoclonus seizure resulting from accidental injection of tranexamic acid in spinal anesthesia. *Anesth Analg* 2009;108(6):1984–1986. DOI: 10.1213/ane.0b013e3181a04d69.
3. Veisi F, Salami B, Mohseni G. Accidental intrathecal injection of tranexamic acid in caesarean section: a fatal medication error. *APSF Newsletter Spring*; 2010.
4. Patel S, Loveridge R. Obstetric neuraxial drug administration errors: a quantitative and qualitative analytical review. *Anesth Analg* 2015;121(6):1570–1577. DOI: 10.1213/ANE.0000000000000938.