

Generalized Seizure Following Ondansetron Administration During Cesarean Section

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Abstract

Introduction:

Ondansetron is a selective serotonin type 3 (5-HT₃) antagonist commonly used for postoperative nausea and vomiting (PONV) prophylaxis. Ondansetron is generally regarded as a safe drug with a small incidence of adverse effects. We report occurrence of a generalized tonic-clonic seizure shortly after ondansetron administration during cesarean section.

Case:

A 26-year-old G₂P₁ term parturient presented to labor and delivery suite in active labor. An epidural was placed for pain control when she was 4cm dilated. She was comfortable for six hours but then received incremental doses of 0.25% bupivacaine for discomfort. Her clinical course was remarkable for epidural catheter dislodgement and replacement.

Cesarean section was performed for failure to progress. A T₄ surgical level was achieved with 3% chloroprocaine (15 cc). A healthy infant was delivered and oxytocin given. Persistent uterine atony required administration of methylergonovine 0.2 mg intramuscularly.

Ondansetron 4 mg was given intravenously to prevent PONV. Four minutes later, the patient had a generalized tonic-clonic seizure which ceased spontaneously. Cricoid pressure was applied. Face mask oxygen was delivered. Spontaneous ventilations and oxygen saturation remained 100%. Postoperatively, the patient was in a post-ictal state.

CT of the brain was normal along with electrolytes, blood glucose, and urinalysis. The patient underwent unremarkable recovery and was discharged home on postoperative day #3.

Discussion:

Ondansetron is used in the prevention and treatment of PONV. The recommended dose for prophylaxis is 4-8 mg intravenously in adults. Its efficacy has not been extensively studied in pregnancy.

Ondansetron has a relatively small incidence of adverse effects. There have been case reports of extrapyramidal side effects during ondansetron therapy.^(1,2,3) Sargent and colleagues described seizure occurrence in an ondansetron-treated patient who did not have malignancy or other substantial risk factors for seizure development.

(4) Sharma and Raina described tonic-clonic seizures in a 55 year old woman with metastatic breast cancer on the second day of ondansetron therapy.⁽⁵⁾

This patient was healthy and without risk factors for seizures. Imaging and laboratory studies were normal. The last drug given prior to witnessing seizure activity was ondansetron. We believe ondansetron was the causative agent. This conclusion is based on the occurrence of the seizure shortly after ondansetron administration.

References:

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Introduction

Ondansetron is a selective serotonin type 3 (5-HT₃) antagonist. The recommended dose for postoperative nausea and vomiting (PONV) prophylaxis is 4 to 8 mg intravenous in adults. Its efficacy has not been extensively studied in pregnancy. Ondansetron is generally regarded as a safe drug and has a relatively small incidence of severe adverse effects. The reported side effects include headache, dizziness, flushing, elevated liver enzymes, and constipation. We report a case of generalized tonic-clonic seizure shortly after administration of ondansetron.

Case Presentation

A 26-year-old G₂P₁ patient at 39 6/7 weeks gestation presented to labor and delivery suite in active labor. She requested an epidural for pain control when she was 4cm dilated. An epidural was placed at 11:00 and she was comfortable. She started complaining of pain at 17:00. 0.25% bupivacaine was given in incremental doses and 15 minutes later she was still uncomfortable. Upon examination of the patient's back, it was noted that the catheter had come out. Replacement of the epidural catheter occurred when the patient was 7cm dilated.

A cesarean section was called for failure to progress at 21:40. The epidural was bolused with 15 cc of 3% chloroprocaine in fractionated doses. A T₄ dermatomal level was noted and the cesarean section was started. A healthy infant was delivered at 23:35 and oxytocin infusion was started. Uterine atony was noted and so methylergonovine 0.2 mg was given intramuscularly. Ondansetron 4 mg was given intravenously to prevent PONV. Four minutes later, the patient exhibited generalized tonic-clonic seizure activity.

Cricoid pressure was applied. The patient remained with spontaneous ventilations and oxygen was delivered via face mask. Oxygen saturation remained 100%. The cesarean section proceeded uneventfully and the patient was found to be in a post-ictal state in the postanesthesia care unit.

Electrolytes and urinalysis were found to be within normal limits. Computed tomography of the brain was also found to be normal. The patient recovered and was discharged home on postoperative day #3 without any sequelae.

Discussion

New onset seizures during pregnancy may be due to a wide variety of causes. Some of the common etiologies are eclampsia, infection, alcohol/drugs (cocaine or amphetamine) or iatrogenic drugs, intracranial hemorrhage, cortical vein thrombosis, mass lesions, and head trauma.

Seizures during pregnancy unless proven otherwise are due to eclampsia. In our patient, the urine was negative for protein. Blood pressures were not elevated before or after the seizure. The only elevated blood pressure was during the seizure episode. Liver function tests and coagulation profile were within normal limits. Therefore, we were able to rule out eclampsia as a cause for seizure.

Cephalosporins are epileptogenic when given in excessive doses or in patients with renal failure (1). Our patient only received 2gm Cefazolin and her renal function was normal.

Methylergonovine is a semi-synthetic ergot alkaloid used for the prevention and control of postpartum hemorrhage. Side effects associated with this drug are diarrhea, nausea & vomiting, abdominal pain, water intoxication, and high blood pressure, which can cause a headache or even a seizure. Our patient did not have elevated blood pressure before the seizure. There has been no published report of seizures associated with methylergonovine to date.

Ondansetron, a selective 5-HT₃ antagonist, is effective in the prevention and treatment of PONV. Ondansetron has a relatively small incidence of adverse effects. However, since 1991 there have been case reports suggesting that ondansetron may cause extrapyramidal side effects and seizures (2-6).

Some possible mechanisms of CNS-related side effects of ondansetron are: blockade of 5-HT receptors at central sites, blockade of cell firing, and dopamine release in the nucleus accumbens. Ondansetron also has the potential to inhibit or reduce elevated mesolimbic dopaminergic activity and to antagonize increased locomotor activity caused by mesolimbic dopamine excess (4; 7). Because of this action, ondansetron has been successfully used to attenuate the levodopa-associated psychosis in patients with Parkinson's disease (8). Sprung and colleagues warned that ondansetron can induce extrapyramidal reactions in susceptible individuals. They reported a potential cross reactivity between prochlorperazine and ondansetron after a patient experienced dystonic reactions to both the drugs (5).

There are 2 case reports of seizures that may have been induced by ondansetron. Sargent and colleagues described the occurrence of a seizure in an ondansetron-treated patient who did not have malignancy or other substantial risk factors for the development of seizures (2). Sharma and Raina described tonic-clonic seizures in a 55 year old woman with metastatic breast cancer on the second day of ondansetron therapy (3).

Conclusion

The patient described in this case presentation was healthy and had no known risk factors for seizures. CT scan of brain was normal along with electrolytes, blood glucose levels, and urinalysis. The last drug that was given prior to witnessing the seizure activity was ondansetron. It is believed that the seizure in this patient was caused by ondansetron as the seizure occurred shortly after administration of the drug.

References

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