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CORRESPONDENCE

Serotonin Syndrome as a Complication of Fentanyl Sedation During Esophagogastroduodenoscopy

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To the Editor,

Fentanyl is a medication commonly used to induce and maintain conscious sedation during endoscopic procedures. Fentanyl, a direct serotonin agonist, has many advantages, including its relatively short half-life and lack of histamine-releasing effect [1]. It can precipitate serotonin syndrome when prescribed with other serotogenic medications such as monoamine oxidase inhibitors, lithium, ondansetron, selective serotonin reuptake inhibitors, serotonin, norepinephrine reuptake inhibitors, tricyclic antidepressants, amphetamines, and others [2]. To our knowledge, serotonin syndrome has not been described as a complication of fentanyl use during esophagogastroduodenoscopy nor colonoscopy. Here we report the first case of serotonin syndrome secondary to fentanyl in a patient undergoing esophagogastroduodenoscopy.

Case Report

A 39-year-old Asian woman with alcoholic cirrhosis presented with hematemesis. The patient was started on octreotide and pantoprazole drip. The patient was on sertraline 100 mg daily. The patient underwent esophagogastroduodenoscopy and was medicated with 50 μg fentanyl in two doses of 25 μg 3 min apart and 2 mg midazolam in two doses of 1 mg. The esophagogastroduodenoscopy showed Mallory Weiss syndrome and grade I nonbleeding esophageal varices. Following the procedure, the patient became somnolent and began displaying extreme rigidity in all four extremities. The patient was given vecuronium and etomidate for an urgent intubation. Following the intubation the patient became increasingly rigid, diffusely diaphoretic, and began displaying horizontal roving eye movements. Patient developed a fever of 105.0°F. The laboratory results were consistent with rhabdomyolysis (creatine phosphokinase CPK of 2,800 U/l) and an ammonia level of 340 μmol/l. The patient was given 2 mg IV lorazepam over the concern that this was seizure activity; however, there was no improvement in symptoms. Patient was placed on propofol drip for sedation following the intubation. Computed tomography (CT) scan of the brain did not disclose any acute intracranial process. Neurology team was then consulted, and diagnosed the patient with serotonin syndrome based on the interaction between fentanyl and sertraline. The patient was treated with propofol sedation, cooling blanket, and cyproheptadine. Over the next 3 days, the patient's temperature normalized and her CPK went down to 400 U/l. The patient was later extubated and she did well subsequently.

Discussion

Serotonin syndrome is a potentially life-threatening condition that is associated with increased serotonergic activity in the central nervous system. It is usually seen with certain medications use, inadvertent interactions between drugs, and intentional poisoning [2, 3]. The disease is a spectrum of clinical findings. Classically, it is described as triad of mental status changes, autonomic hyperactivity, and neuromuscular abnormalities. Clinical presentations include anxiety, agitated delirium, restlessness, and disorientation

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diaphoresis, tachycardia, hyperthermia, hypertension, vomiting, and diarrhea tremor, muscle rigidity, myoclonus, hyperreflexia, and bilateral Babinski sign [2]. Risk factors for serotonin syndrome include dehydration, organic brain diseases, and agitation.

The diagnosis of serotonin syndrome is a clinical diagnosis [2]. Serum serotonin concentration is useless as it does not correlate with clinical findings [3]. There is no laboratory test to confirm the diagnosis but some nonspecific laboratory findings may be seen, including leukocytosis, elevated creatine phosphokinase, and decreased serum bicarbonate concentration. Severe cases may be complicated with disseminated intravascular coagulation, myoglobinuria, metabolic acidosis, renal failure, rhabdomyolysis, and acute respiratory distress syndrome [2, 3].

Three general principles to manage patient with serotonin syndrome include discontinuation of all serotonergic agents, supportive care, and use of serotonin antagonist. Neurology service should be consulted as the condition may represent a life-threatening situation [2].

In conclusion, this case represents the first reported serotonin syndrome in patient undergoing fentanyl sedation for upper endoscopic procedure. Because of its rarity, we do not recommend change in the common practice of sedation for endoscopic procedure. However, physicians performing endoscopic procedures should be aware of this potential lethal drug interaction as early intervention can save patient's life.

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