

Induction of Labor

Topic- based Uworld Questions

Block 1, 2, 7, 8





A 27-year-old woman, gravida 1 para 1, is evaluated on the postpartum floor due to a generalized tonic-clonic seizure that occurred 30 hours after a vaginal delivery. The patient was induced at 37 weeks gestation for preeclampsia with severe features via an oxytocin infusion for 48 hours. She also received magnesium sulfate for maternal seizure prophylaxis, which was discontinued 24 hours after delivery. The patient had a spontaneous vaginal delivery complicated by a postpartum hemorrhage that was treated with bimanual uterine massage and an oxytocin bolus and infusion. Temperature is 37.1 C (98.7 F), blood pressure is 128/82 mm Hg, pulse is 78/min, and respirations are 18/min. Physical examination shows a lethargic patient with no focal neurologic deficits. Laboratory results on serum drawn immediately after the seizure are as follows:

Hemoglobin	10 g/dL	
Platelets	160,000/mm ³	
Sodium	112 mEq/L	
Potassium	3.6 mEq/L	
Chloride	100 mEq/L	
Magnesium	5.1 mg/dL	(normal therapeutic range: 4.8-8.4 mg/dL)

Which of the following is the most likely underlying cause of this patient's seizure?

- A. Acute blood loss anemia
- B. Alcohol withdrawal
- C. Intracerebral hemorrhage
- D. Magnesium sulfate toxicity
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Which of the following is the most likely underlying cause of this patient's seizure?

- A. Acute blood loss anemia (12%)
- B. Alcohol withdrawal (6%)
- C. Intracerebral hemorrhage (15%)
- D. Magnesium sulfate toxicity (8%)
- E. Oxytocin side effect (56%)

Omitted

Correct answer



56%

Answered correctly



04 secs

Time Spent



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Last Updated

Explanation

This patient had a generalized tonic-clonic seizure after an induction of labor for preeclampsia with severe features. The most common cause of **postpartum seizure** is eclampsia; however, given this patient's normal blood pressure and magnesium level that is in the therapeutic range for preeclampsia/eclampsia management, other causes require evaluation. With a sodium level of 112 mEq/L, this patient's seizure is mostly likely due to **severe hyponatremia**, a rare **side effect** of oxytocin.

Oxytocin, commonly used for induction of labor and postpartum hemorrhage management, has a similar structure to **antidiuretic hormone** (vasopressin); therefore, elevated levels can stimulate the renal collecting ducts to increase free water absorption. This leads to acute hyponatremia, decreased serum osmolality, and increased free water movement into the brain cells with resultant cerebral edema and seizure. The risk of this rare but life-threatening side effect is increased with **excessive** or **prolonged oxytocin administration**, as seen in this patient who had a 48-hour oxytocin infusion followed by a bolus.

Management of oxytocin-induced hyponatremia includes cessation of oxytocin infusion and gradual administration of hypertonic saline (eg, 3% saline) in symptomatic patients (eg, seizures) to raise serum osmolality and reverse cerebral edema.

(Choice A) Acute blood loss anemia from postpartum hemorrhage can cause pituitary infarction (ie, Sheehan syndrome). Sheehan syndrome typically has a delayed presentation of nonspecific symptoms such as fatigue and decreased lactation, not an isolated seizure.

(Choice B) Alcohol withdrawal can cause tonic-clonic seizures. Alcohol withdrawal seizures typically occur 12-48 hours after the last alcoholic drink and are not usually associated with severe hyponatremia.

(Choice C) Intracerebral hemorrhage from hypertensive crisis (eg, uncontrolled preeclampsia) may present with seizures. However, patients typically have focal neurologic deficits and severely elevated blood pressure (ie, systolic ≥ 160 or diastolic ≥ 110 mm Hg), which are not seen in this patient.

(Choice D) Although magnesium sulfate toxicity (ie, ≥ 8.4 mg/dL) can cause hyporeflexia, lethargy, respiratory failure, and eventual cardiac arrest, it does not cause seizure. In addition, this patient's level is within the therapeutic range.

Educational objective:

Because oxytocin has a similar structure to antidiuretic hormone, prolonged or excessive oxytocin administration can cause severe hyponatremia,

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Educational objective:

Because oxytocin has a similar structure to antidiuretic hormone, prolonged or excessive oxytocin administration can cause severe hyponatremia, cerebral edema, and generalized tonic-clonic seizures.

References

- [Oxytocin infusion: acute hyponatraemia, seizures and coma.](#)