



Severe Hyponatremia in Preeclampsia

Ashlee Gourdine, MD; Megan McClain, MD; Bhavani S. Kodali, MBBS, MD; Shobana Bharadwaj, MBBS; Khang Lee, MD

University of Maryland School of Medicine

Department of Anesthesiology

Background

- Preeclampsia (PE) induces a multisystemic maternal syndrome that exhibits a myriad of symptoms correlated to disease severity and onset.
- Effective management of preeclampsia requires knowledge of associated diagnostic criteria and care guidelines as it correlates to disease progression.
- Mild hypovolemic hyponatremia is an expected physiologic change in pregnancy secondary to the release of human chorionic gonadotropin and oxytocin-mediated atrial natriuretic peptide secretion.
- Severe hyponatremia, however, is a medical emergency that is a rare complication of preeclampsia.

Clinical Presentation

A 35-year-old G4P0211 admitted to labor and delivery at 31 weeks for worsening nausea, dyspnea and facial edema with a diagnosis of preeclampsia.

Past Medical History

- Asthma
- Chronic hypertension
- Hx two prior pregnancies complicated by:
 - Preeclampsia
 - placental abruption requiring C/S

Patient's symptoms worsened to severe range blood pressures (170/102 mmHg), anasarca, and laboratory values significant for:

- serum creatinine 1.42 mg/dl
- sodium 110 mEq/L
- urine protein: creatinine ratio 0.823



Severe Hyponatremia in Preeclampsia

Ashlee Gourdine, MD; Megan McClain, MD; Bhavani S. Kodali, MBBS, MD; Shobana Bharadwaj, MBBS; Khang Lee, MD
University of Maryland School of Medicine
Department of Anesthesiology

Clinical Course

The decision was made to perform cesarean delivery at 31-weeks gestation.

Intraoperative course was uncomplicated, and the infant was born with Apgar scores 8-9 and normal sodium levels.

Postoperatively, during fluid restriction and progressive correction of the maternal hyponatremia, patient displayed transient altered mental status.

Differential diagnosis:

- posterior reversible encephalopathy syndrome (PRES)
- focal seizures
- metabolic encephalopathy
- cerebrovascular accident

Clinical Course

- An emergent head computed tomography (CT) scan displayed normal anatomy without evidence of intracranial hemorrhage, infarct, cerebral edema, or mass effect.
- Metabolic encephalopathy in the setting of severe hyponatremia was suspected
- The patient was transferred to the intensive care unit for further management. With continued correction, the patient's severe hyponatremia improved
- Her management was subsequently transitioned to outpatient care



Severe Hyponatremia in Preeclampsia

Ashlee Gourdine, MD; Megan McClain, MD; Bhavani S. Kodali, MBBS, MD; Shobana Bharadwaj, MBBS; Khang Lee, MD
University of Maryland School of Medicine
Department of Anesthesiology

Hospital Day	Admission	Preoperative	POD 0	POD 1
Na	113	114	110	117
K	3.6	3.7	4.3	3.3
Creatinine	1.01	1.38	1.83	1.10
AST	77	80	125	131
ALT	39	41	45	44
Albumin	2.5	2.5	2.4	2.3
Serum Osmolality	237	--	--	--
Urine Osmolality	481	--	--	--
Glucose	93	78	86	108

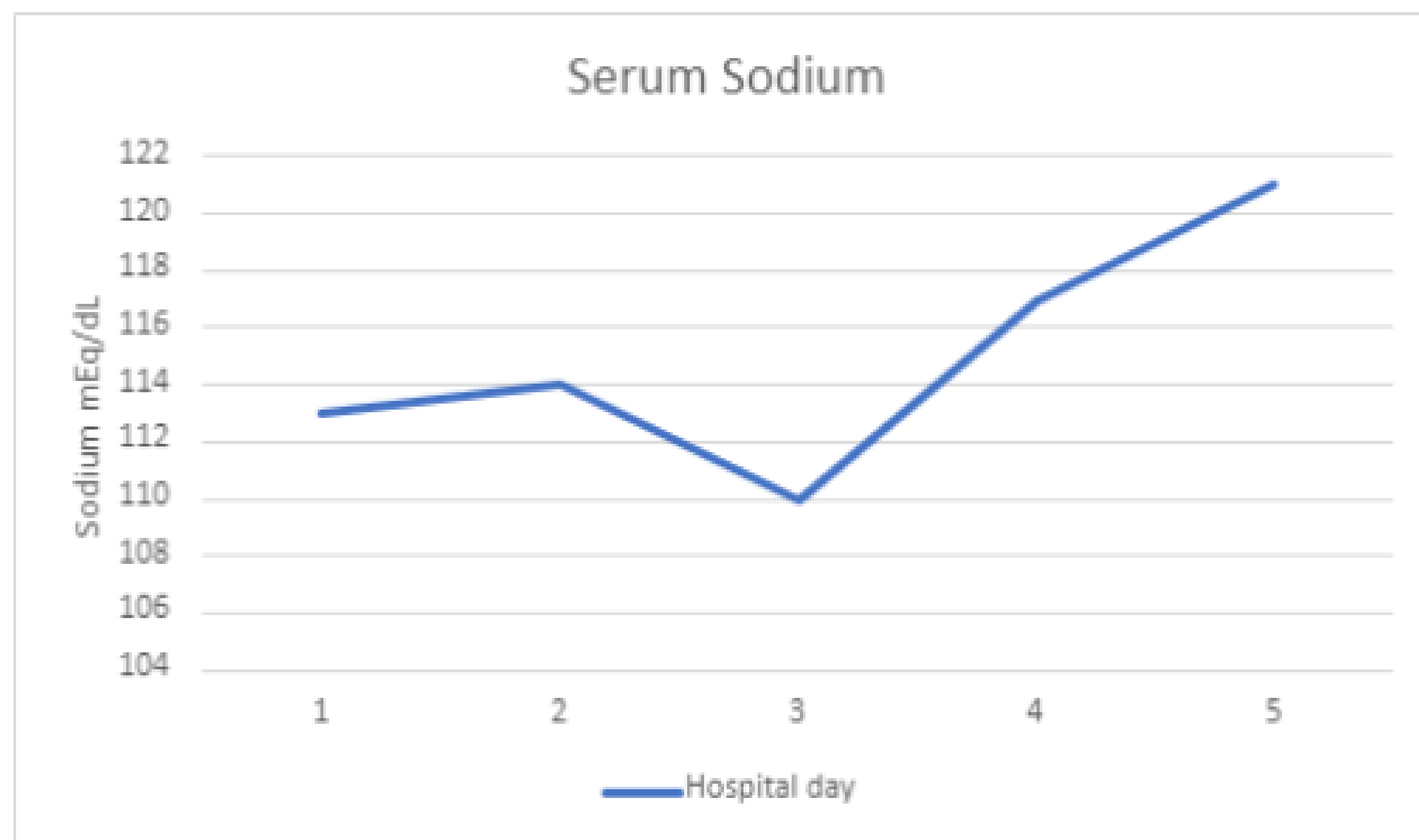


Figure 1: Serial Basic Metabolic panel of parturient including serum sodium

References

Kahramanoglu I, Baktiroglu M, Yucel O, Verit FF (2014) Preeclampsia as a Rare Cause of Hyponatremia. Gynecol Obstet (Sunnyvale) 4: 221. doi:10.4172/2161-0932.1000221
Sandhu, G., et al. "Pathophysiology and management of preeclampsia-associated severe hyponatremia." American journal of kidney diseases 55.3 (2010): 599-603.

Discussion

- Mild hypovolemic hyponatremia is an expected physiologic change in pregnancy secondary to the release of human chorionic gonadotropin and oxytocin-mediated atrial natriuretic peptide secretion.
- Severe hyponatremia, however, is a medical emergency that is a rare complication of preeclampsia.
- Severe hyponatremia of preeclampsia is commonly associated with a hypervolemic state, nephrotic syndrome, and decreased inactivation of circulating anti-diuretic hormone by vasopressinase.
- Evaluation and management of this unique case highlights a critical comorbidity of PE, providing perioperative anesthetic considerations in multidisciplinary evaluation and treatment.