

Letter to Editor

Hyponatremia in A Patient with Preeclampsia

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www.jeimp.com and digitalmkd.com**Dear Editor;**

Pregnancy is known to induce changes in fluid and sodium balance. The normal serum sodium level (135-145 mmol/L) decreases by approximately 5 mmol/L by term. Preeclampsia typically develops after the 20th week of gestation and condition characterized by high blood pressure and proteinuria. Hyponatremia may infrequently develop in these cases. Determining the cause of low sodium levels (< 135 mmol/L) can be challenging. Still, it is crucial for guiding appropriate treatment, as it can impact both maternal and fetal outcomes, both acutely and long-term (1).

During pregnancy, the placenta plays a key role in regulating fluid balance by releasing vasopressinase, an enzyme that breaks down and inactivates antidiuretic hormone (ADH). A defective placenta in preeclampsia can impair this process, increasing water retention (2).

We report the case of a 26-year-old woman at 24 weeks of gestation with severe hyponatremia. She had a history of preeclampsia in a previous pregnancy and was under medication-controlled management for hypothyroidism. She was taking Alfa metil dopa (four times daily) and was being monitored due to proteinuria (1 gr/day). On initial examination, her blood pressure was 128/87 mmHg, pulse was 97 beats per minute, and no edema was observed. Lung auscultation was normal. On the first day of hospitalization, her serum sodium level was 137 mmol/L. However, sodium dropped to 117 mmol/L on the second day. 150 cc of 3% NaCl hypertonic saline infusion (twice daily) was administered, while sodium levels were measured twice daily. On the first day of treatment, there was an increase of 2 mmol/L in sodium levels.

The patient developed seizures and confusion and was subsequently transferred to the intensive care unit. No findings suggestive of central pathology were detected on neurological examination.

Further investigation into the cause of her hyponatremia included laboratory tests. Urinary sodium was 135 mmol/L, while serum and urine osmolality values were 241 mOsmol/L and 519 mOsmol/kg, respectively (see Table 1). Given the findings of normovolemic hyponatremia and the exclusion of other causes, a diagnosis of Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH) was considered. The daily fluid intake has been restricted to 1 liter. Following a three-day monitoring period, sodium levels reached a safe value of 130 mmol/L.

One of the primary factors contributing to hyponatremia in pregnancy is the reduction in plasma osmolality, which lowers the osmotic set point. This is associated with increased levels of human chorionic gonadotropin (hCG) (3).

In pregnancy, a decrease in blood pressure occurs early on, reducing effective circulatory volume. This triggers the non-osmotic release of ADH and activation of the sympathetic nervous system and the renin-angiotensin system to maintain adequate organ perfusion. Additionally, factors such as nausea, vomiting, or pain during labor can further stimulate ADH release. Inappropriate ADH secretion in response to low sodium intake, polydipsia, or excessive intravenous fluids can exacerbate hyponatremia during pregnancy. For these reasons, hyponatremia is a common occurrence during

the peripartum period. The primary treatment approach involves careful fluid management and restriction. Currently, there is no available safety data on the use of vasopressin antagonists (such as tolvaptan) during pregnancy (4). In our case, fluid restriction was employed and the patient responded positively, indicating the effectiveness of this approach.

Razavi et al. found that 32 out of 332 pregnant women diagnosed with preeclampsia developed hyponatremia. Hyponatremia was present in the majority of patients with preeclampsia with severe features. This condition is a significant cause of morbidity in pregnant women, with an increased risk in older women and those with twin pregnancies. An eclamptic seizure occurred in only one patient who did not have hyponatremia (5). Our case highlights that, although the patient was relatively young, she developed hyponatremia during pregnancy, which required intensive care management due to neurological symptoms, including seizures.

In conclusion, pregnancy induces significant physiological changes in fluid and electrolyte balance, with sodium regulation closely tied to ADH. The pathophysiology of this process is not yet fully understood, and further large-scale studies are needed to elucidate the underlying mechanisms.

Consent form: The consent document could not be obtained as the patient could not be contacted during her intensive care follow-up.

DECLARATIONS

Ethics Committee Approval: Not required.

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