

# Maternal neurological deterioration in a home birth

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## INTRODUCTION

- Peripartum hyponatraemia is defined as blood sodium concentration below 130 mmol/L<sup>1</sup>.
- It is a common but underreported condition with potentially devastating consequences for mothers and their babies.
- We discuss the anaesthetic management of a case of acute severe peripartum hyponatraemia.
- This case report highlights learning points, in particular, the need for accurate fluid balance monitoring in labour, and a working knowledge of the Guidelines and Audit Implementation Network (GAIN) peripartum hyponatraemia guidelines.

## CASE REPORT

### Background:

- A 34-year-old G1 PO having a pool birth at home when she developed sudden-onset reduced GCS after having a witnessed seizure.

### Events:

- Transfer to hospital by Emergency Medical Retrieval team due to differential diagnosis of haemorrhagic stroke.
- On arrival: cervix fully dilated; patient disorientated, agitated, unable to cooperate.
- Successful Cat 1 TOF under general anaesthesia (TIVA RSI). Arterial line sited, bloods taken, including VBG and ROTEM.
- MgSO<sub>4</sub>** administered in theatre: 4g IV over 5 minutes, then 1g/hr maintenance (to cover the differential diagnosis of eclampsia).
- On return from CT, phone call from Duty Biochemist: maternal **Na<sup>+</sup> 116mmol/L**.
- Collateral history: maternal water intake of **nine litres over 24 hours**.

### Treatment and outcome:

- CT brain: no evidence of intracranial haemorrhage or infarct.
- Management of severe hyponatraemia as per GAIN guidelines:
  - Bolus of **200mL 2.7% NaCl** over 30 minutes
  - 20mg IV furosemide**
  - Caution **not** to raise Na by more than 12mmol/L over 24 hours.
- The patient was extubated and monitored on HDU for 48 hours, then returned to Delivery Suite until full resolution of symptoms (24 hours).
- The baby was admitted to Neonatal Intensive Care Unit with severe asymptomatic hyponatraemia (Na 120mmol/L) - managed conservatively.
- Both mother and baby made a full recovery.

## DISCUSSION

- Women in labour are predisposed to hyponatraemia due to:
  - a lower baseline plasma sodium
  - reduced ability to excrete water
  - increased exposure to oxytocin which has antidiuretic properties<sup>2</sup>.
- Accurate fluid balance monitoring is crucial for prevention of peripartum hyponatraemia<sup>3</sup>.
- In 2017, GAIN produced guidelines for peripartum recognition and management of hyponatremia.
- These guidelines should be reviewed and shared with the multidisciplinary team. There is now more awareness in hospital-based delivery units, and future efforts could focus on improving awareness within community midwifery teams as well as patient education.

## KEY LEARNING

- Importance of **education** and up to date knowledge of guidelines on peripartum hyponatraemia recognition and management, including in 'low-risk' pregnancies.
- Seizures in labour should be treated as **eclampsia** until proven otherwise<sup>4</sup>.
- Hypertonic saline and normal saline bags can look **similar**.
  - We suggest take extra care to check, and consider keeping hypertonic saline in a designated space.
- ABG machines should undergo **regular maintenance**, ensuring the sodium module is functional.

## ACKNOWLEDGEMENTS

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