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The association between umbilical cord, maternal and neonatal sodium concentration: using cord gas point of care analysis to expedite a diagnosis of peripartum hyponatraemia

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Introduction

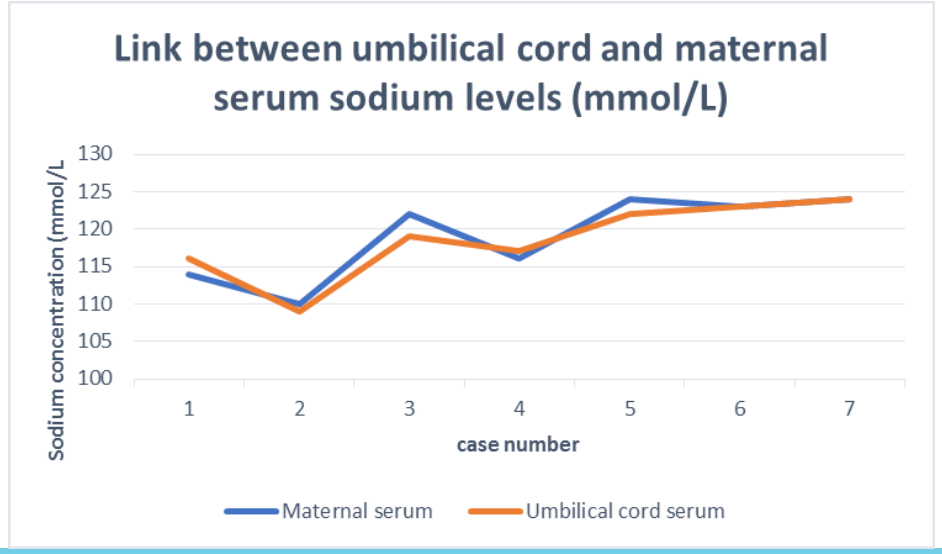
Intrapartum hyponatraemia is potentially life threatening yet often non-specific symptoms can result in a delayed diagnosis. Umbilical artery and venous serum sodium is correlated to maternal plasma sodium. Guidelines neglect to use cord blood for diagnosis of maternal hyponatraemia. We aim to assess the links between umbilical artery sodium and maternal and neonatal sodium in symptomatic and asymptomatic severe maternal hyponatraemia.

Methods

During 2017-2019 we reviewed the cases of all severe intrapartum hyponatraemia within our hospital trust. Severe hyponatraemia was defined as serum sodium <125mmol/L.

Results

10 cases were identified. 6 cases were symptomatic and of these the mean maternal serum sodium level was 116.5 mmol/L (110-120 mmol/L). 3 of these cases had cord gas samples taken and 5 had neonatal serum sodium levels taken. Comparison between the maternal serum and cord gas sodium levels showed a maximum of 3mmol/L difference between the 2 values. All neonatal serum sodium levels taken also showed hyponatraemia with a mean time of testing 11.9 hours post delivery (range 7.5-15.5 hours). 4 cases were identified as asymptomatic severe maternal hyponatraemia with cord blood gas sampling at delivery and the mean maternal sodium level was 121.75mmol/L (116-124 mmol/L). Comparison of these results with the umbilical cord gas sodium concentrations showed a maximum of 2mmol/L difference. The mean time for maternal serum sodium concentration sampling was 4.8 hours post delivery (0.95-7.77 hours).



Discussion

These cases show that in women who are asymptomatic or exhibit non-specific symptoms in labour, rapid point of care measurement of a cord sodium level at delivery could expedite further investigations of both the mother and neonate to reduce the delay in diagnosis and management of hyponatraemia.

References

1. Moen V et al. Hyponatraemia complicating labour - Rare or unrecognised? A prospective observational study. BJOG An Int J ObstetGynacol 2009;116(4):552-61

2. GAIN. Guideline for the Prevention, Diagnosis and Management of Hyponatraemia in Labour and the Immediate Postpartum Period https://rqia.org.uk/RQIA/files/df/dfd57ddd-ceb3-4c0d-9719- 8e33e179d0ff.pdf, April 2017