Introduction

We report the case of a preterm neonate who developed a transient hyperphosphatemia at 1 month of age with associated hyperuremia, hypercreatininemia and hyperparathyroidism. She was asymptomatic.

Case Report

This baby girl was born by emergency Caesarean section for maternal APH at 27+6 weeks and weighed 1180g. She had an uneventful neonatal period with minimal ventilation. She was treated with ibuprofen, amiloride and furosemide for a PDA (Patent ductus arteriosus) with associated heart failure. Her enteral feeds had been increased and fortified due to poor weight gain. Her other medications include caffeine citrate, erythromycin, ranitidine, sodium chloride supplements and vitamins. At 1 month of age, she developed hyperphosphatemia (phosphate 3.93 mmol/L) with associated hyperurea (urea 14.3 mmol/L) and hypercreatininemia (creatinine 58 umol/L). Potassium remained on the higher end of normal (5.1 mmol/L) and sodium was stable on supplements (134 mmol/L). The parathormone level was 33pmol/L(1.3-6.8). Urine output was adequate but her weight gain was suboptimal. Wrist and knee x-rays, ultrasound kidneys and blood gas were all normal.

Furosemide was changed to Chlorothiazide. Breast milk fortifier was discontinued. Following advice, calcium supplement was started (despite normal calcium 2.53 mmol/L and adjusted calcium 2.63 mmol/L). The phosphate and parathormone levels returned to normal

Conclusion

Despite thorough investigations, we were not able to identify a cause for this hyperphosphataemia. Parathyroid hormone resistance was considered, which may have been driven by relative hypocalcaemia even though the serum calcium levels were normal.

One possible explanation was the Furosemide causing a hypocalcaemia which in turn caused the hyperparathyroidism but resistance to the parathyroid hormone occurred to avoid calcium depleting the bones which explained the normal calcium.

The other explanation was the fortification with SMA BMF. A 2g sachet provides 23mg of phosphorus compared to 14mg in preterm and 15mg in mature breast milk. Commercial human milk fortifiers are predominantly a protein and mineral supplement. They also typically contain additional calories, electrolytes and vitamins.

References

http://www.smahcp.co.uk/Portals/0/CONTENT/Images/Products/PretermRange/BreastMilk/Datacard/BMF.pdf
http://www.nature.com/nrneph/journal/v10/n5/full/nrneph.2014.49.html
http://www.nature.com/journal/v68/n96s/fig_tab/4496402f1.html