Neonatal thyrotoxicosis and craniosynostosis associated with maternal Graves’ disease and high dose maternal thyroxine therapy for papillary carcinoma

Sumudu Seneviratne, Nishani Lucas, Ashangi Weerasinghe
Department of Paediatrics, Faculty of Medicine, University of Colombo, Sri Lanka

Introduction

- Neonatal Graves disease (NGD) occurs in 1-2% of newborns of women with Graves disease, from trans-placental passage of maternal antibodies (1).
- Thyroid auto-antibodies can persist in the maternal circulation, even 10 years after thyroidecomy (2).
- During pregnancy, both maternal TSH-stimulating auto-antibodies and high dose thyroxine can cross the placenta, and cause craniosynostosis in the baby (3).
- We report an infant with neonatal Graves disease and craniosynostosis
- The mother had undergone total thyroidectomy for medically uncontrolled Graves disease prior to the pregnancy, and was high dose thyroxine therapy throughout pregnancy

Case History

Baby boy
- Delivered at 32 weeks of gestation by emergency caesarean section due to fetal distress
- Respiratory distress and tachycardia from birth, no goitre
- Baby’s thyroid functions assessed on day 2: normal fT4 [4.6 ng/dl (2-5)], low TSH [0.005 mIU/L (1-20)] (Graph 1 a)
- On day 5, baby developed diarrhoea, high blood pressure and proptosis
- Serum fT4 elevated [5.4 ng/dl ( normal range 0.9-2.2)] (Graph 1 b)

Mother
- 33 year old, with past history of Graves disease a few years prior to pregnancy, with poor control medically
- Total thyroidecomy done, few months prior to conception
- Micropapillary thyroid carcinoma detected on routine histology
- Commenced on oral thyroxine 200 μg/d by oncologist to suppress TSH
- Unplanned pregnancy, thyroxine continued throughout pregnancy by mother
- Maternal thyroxine and thyroid auto antibody levels not monitored in pregnancy
- Very infrequent antenatal clinic attendance
- Bilateral exophthalmos, and thyroidectomy scar on examination

Management

- Baby commenced on carbimazole and propranolol on day 5
- Gradual clinical improvement & normalization of fT4 (Graph1 b)
- Thyroid functions monitored regularly
- Carbimazole gradually tapered off over 3 months

At follow up at 9 months of age (figure 1)
- Microcephaly (figure 2) with mild developmental delay
- Completely fused anterior fontanel with radiological evidence of premature suture fusion

Conclusions

- Both fetal/neonatal hyperthyroidism from maternal stimulating antibodies and high dose maternal thyroxine therapy could have contributed to craniosynostosis /microcephaly in this baby
- It is important to be vigilant of past maternal autoimmune thyroid disease during pregnancy, and monitor the fetus and new-born accordingly, as persisting maternal antibodies can cause neonatal thyroid problems
- Young females with thyroid disease should be educated on the importance of obtaining medical advice and monitoring their thyroid functions pre-conceptually and during pregnancy, and informing the neonatal team at delivery, to monitor the newborn as necessary

References


Disclosure - the authors have no potential conflicts of interest to declare