Conclusions

Early diagnosis and treatment of neonatal thyrotoxicosis are important to avoid serious cardiovascular complications. Therefore, every neonate of a mother with Graves’ disease needs careful follow up.

Early information (before or right after delivery) of the neonatology care team about the maternal condition by the mother / obstetrician / adult endocrinologist is essential. Involvement of pediatric endocrinologists is recommended, as well as a flow chart for the neonatology care team (see above).

Background

Neonatal thyrotoxicosis is a rare but potentially life-threatening condition in offsprings of mothers with Graves’ disease and elevated TSH receptor antibodies (TRAb) during pregnancy. Transplacentally transferred maternal TRAb may stimulate neonatal TSH receptor leading to goiter and hyperthyroidism. This process may initially be concealed by maternal antithyroid drug use. On the other hand, TRAb and/or antithyroid drugs may have a blocking effect on neonatal thyroid function leading to a transient hypothyroid state with potential impact on neurologic development.

Case report

History: This full-term female neonate of a mother with highly active Graves’ disease during pregnancy (TRAb 91.8U/l [normal range <1] in the last trimester) was presented to our emergency department on day 11 with restlessness, diarrhea and insatiable hunger.

The clinical examination was remarkable for tachycardia (up to 214/min), tremor, irritability and hyperthermia.

Laboratory analysis revealed a suppressed TSH and largely elevated thyroid hormone levels with highly positive TRAb, diagnostic for neonatal Graves’ disease (see chart below).

Further studies: ECG and echocardiography were normal but for tachycardic sinus rhythm. Surprisingly, the thyroid gland was not enlarged on ultrasound.

Course: The baby was admitted to the intensive care unit and started on propranolol (2.2 mg/kg/d), carbimazole (0.5 mg/kg/d) and potassium iodide (Lugol’s solution (3x8mg/d)).

Upon treatment, the cardiovascular condition of the patient stabilized quickly. The patient could be discharged after 9 days of hospitalisation, and medication could be weaned over the course of 5 weeks. TRAb titers decreased rapidly.

The clinical condition, development and weight gain were normal at the age of 11 weeks.

Flow chart „maternal autoimmune thyroid disease“

Time course

- TSH (mIU/l)
- FT3 (pmol/l)
- FT4 (pmol/l)
- TRAb (U/l)

Emergency presentation

Mother: third trimester

Cord blood

Neonate: day of life 3-4

Neonate: day of life 10-14

References:
- Stagnaro-Green A et al., Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum; Thyroid. 2011 Oct;21(10):1081-125
- De Groot L et al.; Management of thyroid dysfunction during pregnancy and postpartum; an Endocrine Society clinical practice guideline; J Clin Endocrinol Metab. 2012 Aug;97(8):2543-65
- Rivkees SA et al.; Thyroid disease in pregnancy; Horm Res Paediatr. 2011;76 Suppl 1:91
- Green A et al.; Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum; Thyroid. 2011 Oct;21(10):1081-125

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