

The challenge to treat neonatal autoimmune hyperthyroidism in a small preterm

S Lignitz¹, D Coors², J Pohlenz¹

¹ Department of Pediatrics, Johannes Gutenberg University Medical School Mainz

² Department of Pediatrics, Diakonie Krankenhaus Bad Kreuznach

BACKGROUND

The prevalence of hyperthyroidism in pregnancy is about 0.2% (2,4,5,6), mostly due to Graves disease. Neonatal autoimmune hyperthyroidism caused by the transplacental passage of stimulatory thyrotropin receptor antibodies (TRAB) of the IgG class (3,4,5,6) is a rare disorder. It occurs in only 2% of the neonates of mothers with Graves disease, is transient and associated with high morbidity and mortality rates up to 25% (2). Antithyroid drugs are the treatment of choice for neonates and preterm neonates with hyperthyroidism.

CASE REPORT

We report the rare case of a preterm neonate born at 28+5 weeks of gestational age with a birth weight of 1580 g. After a few days the boy became irritable and developed tachycardia. At the 6th day of life the laboratory investigations revealed hyperthyroidism with suppressed serum TSH-levels, elevated fT4-levels (see Fig. 1) and positive TRABs. Under treatment with propranolol and methimazole the fT4 serum levels declined to the lower limit of the normal range (see Fig. 1), so that an additional supplementation with levothyroxine was initiated. Methimazole was stopped after 3 months when TRABs were negative. The TSH serum levels remained very low for 6 months while fT4 was constantly in the normal range under treatment with levothyroxine. Eventually the levothyroxine dose was reduced and the patient became euthyroid without treatment. Serious side effects under treatment with methimazole such as neutropenia or elevated liver enzymes did not occur.

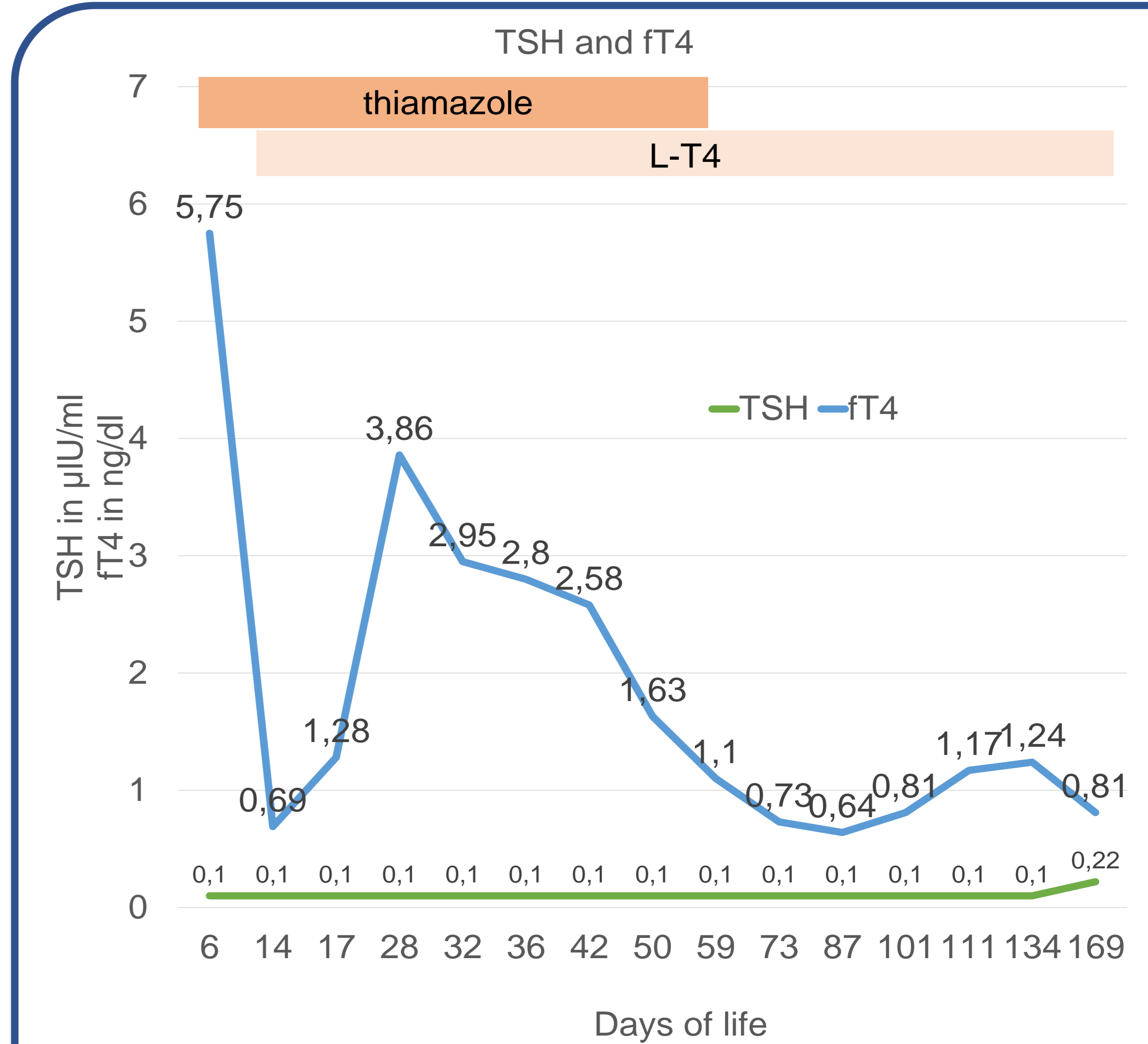


Fig. 1: serum TSH- and fT4 levels

CONCLUSIONS

Although neonatal hyperthyroidism due to maternal TRABs is rare, thyroid function has to be monitored in all neonates born from mothers with Graves disease (3,4). Once hyperthyroidism is diagnosed antithyroidal treatment has to be started. Prematurity is not a contraindication for the use of antithyroidal drugs (6). The treatment has to be monitored thoroughly because of the known serious side effects (1). Furthermore, the fT4 serum levels can decline rapidly in preterm neonates (6) and additionally the serum TSH levels remain suppressed for months (1). To avoid hypothyroidism intermediate treatment with levothyroxine is important (4).

References

- 1) Angelis, D, Kubicky, RA, Zubrow, AB. Methimazole Associated Neutropenia in a Preterm Neonate Treated for Hyperthyroidism. Case Reports in Endocrinology 2015; 1-5
- 2) Besancon, A, Beltrand, J, Le Gac, I, Luton, D, Polak, M. Management of neonates born to women with Graves' disease: a cohort study. European Journal of Endocrinology 2014; 170:855-862
- 3) Van Dijk, MM, Smiths, IH, Fliers, E, Bisschop, PH. Maternal Thyrotropin Receptor Antibody Concentration and the Risk of Fetal and Neonatal Thyrotoxicosis: A Systematic Review, Thyroid 2018; 28: 257-264
- 4) Leger, J. Management of Fetal and Neonatal Graves' Disease. Hormone Research in Paediatrics 2018; 87: 1-6
- 5) Polak, M, Luton, D. Fetal thyroidology. Best Practice & Research Clinical Endocrinology & Metabolism 2013; 28: 161-173
- 6) Smith, C, Thomsett, M, Choong, C, Rodda, C, McIntyre, HD, Cotterill, AM. Congenital thyrotoxicosis in premature infants. Clinical Endocrinology 2001; 54: 371-376