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Central Hypothyroidism Following Neonatal Graves' Presentation

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Introduction

- Neonatal Graves' is a rare disorder secondary to the transplacental passage of thyroid-stimulating hormone receptor antibodies (TRABs) which resolves as the infant clears the maternal antibodies.
- In severe cases, thyrotoxicosis is life threatening and is associated with IUGR, cardiac dysfunction, prematurity, and developmental delay.
- Infants with Neonatal Graves' can rarely present with primary or central hypothyroidism which is suspected to be due to disruption in the hypothalamic-pituitary-thyroid axis or the development of the thyroid gland.

Clinical Case: Presentation

- Male infant born at 34 weeks 4 days with IUGR, biventricular heart failure, and hepatomegaly transferred for cardiac and respiratory failure
- Family history was remarkable for Graves' disease in his mother who received radioiodine ablation. Maternal TRAB and thyroid levels were unavailable.
- For management of thyrotoxicosis, the infant was started on methimazole, potassium iodide (KI), propranolol, and hydrocortisone.
- The infant was discharged on DOL 19 on methimazole and propranolol.
- Labs were closely followed outpatient after discharge. Propranolol was discontinued at 1.5 months of life and methimazole by 2 months. TSI had normalized by 4 months (see Figure 1).

Clinical Case: Follow-up and Management

- He started on levothyroxine (8.5mcg/kg) at 2.5 months of life for persistently low free T4, despite discontinuation of methimazole, suggestive of central hypothyroidism.
- Thyroid function tests have been followed, and levothyroxine adjusted to maintain appropriate levels.
- Additional pituitary testing completed due to central hypothyroidism at 9 months of age (see Table 2).
- He has remained stable on current levothyroxine dosing (2mcg/kg/day) since 9 months of life.
- Anticipating a trial off levothyroxine around 3 years of age.

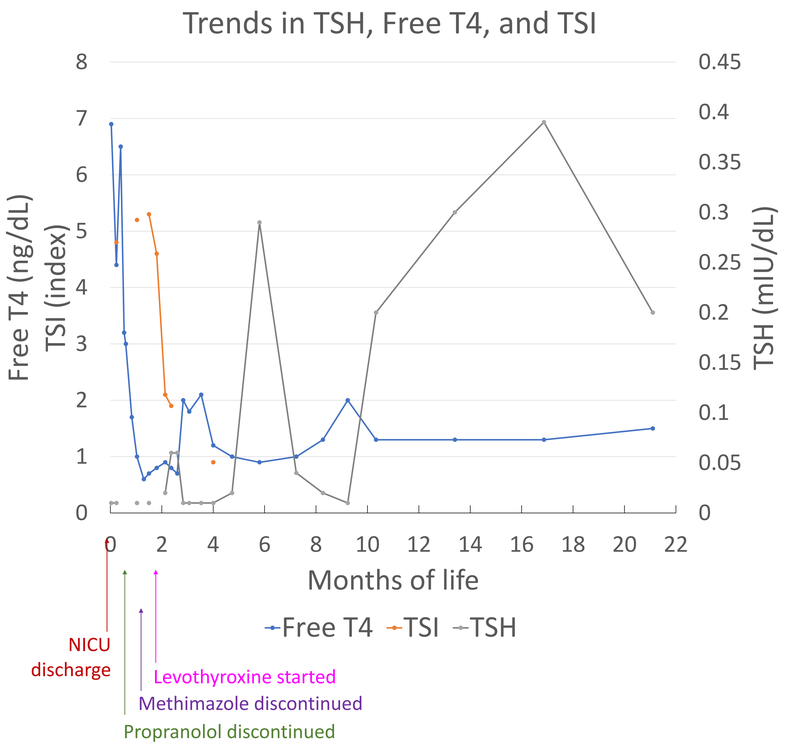

Figure 1: Trends in TSH, Free T4, and TSI throughout hospital course. and following discharge

Clinical Case: Lab Values

	Initial	Discharge
TSH	<0.02 mcIU/mL	
Free T4	6.9 ng/dL	3.0 ng/dL
Total T3	161 nd/dL	287 ng/dL
TSI	4.8	

Table 1: Thyroid function tests obtained initially and at discharge.

Additional Pituitary Screening (9 months)	
IGF1	51ng/mL
Cortisol	11.2mcg/dL
Sodium	136mmol/L
Brain MRI	Incidental small pars intermedia cysts involving the pituitary

Table 2: Lab values and imaging findings of additional pituitary screening obtained for history of central hypothyroidism.

Conclusion / Discussion

- Neonatal Graves' disease can be severe and life threatening. Corticosteroids may be used in severe cases in addition to methimazole, iodine, and beta-blockers.
- Recovery of neonatal Graves' is spontaneous, and methimazole is adjusted and weaned as thyroid function normalizes.
- Central hypothyroidism can develop following Neonatal Graves' disease.
- Due to the risk of the subsequent development of hypothyroidism, it may be worthwhile to continue to trend TSH and FT4 following management of neonatal Graves' disease.

References

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