



Case Report

Congenital Thyrotoxicosis with Congenital Glaucoma: A Case Report

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Abstract

A case of preterm neonate with congenital thyrotoxicosis associated with congenital glaucoma is reported. Her mother had undiagnosed thyrotoxicosis. The diagnosis of thyrotoxicosis in the neonate was confirmed by an elevated serum tri-iodothyronine (T₃) level of 8.09 nmol/L, thyroxin (T₄) level of 3.09 nmol and thyroid stimulating hormone (TSH) level 0.16mu/L.

Congenital glaucoma was confirmed by increased intraocular pressure (IOP) which was 42.1 mmHg in right eye and 38.2 mm Hg in left eye. Corneal diameter was increased which was 13 mm in both eyes. Corneal oedema and Haab striae were also present. Probably, this is the first case of congenital thyrotoxicosis associated with congenital glaucoma reported in Bangladesh.

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Introduction

Neonatal hyperthyroidism occurs in only about 2% of infants born to mothers with a history of Graves disease¹. The prevalence of thyrotoxicosis during pregnancy is about 0.1-0.2%, which is about two in every 1000 pregnancies². Maternal Grave's disease has significant impact on fetal & neonatal outcome³. Grave's disease is by far the most common in women of reproductive age & accounts for the majority of patients with thyrotoxicosis in pregnancy⁴. It is reported that uncontrolled hyperthyroidism during pregnancy is associated with an increased incidence of congenital malformations⁵. The fetal pituitary-thyroid axis functions largely independently of the maternal pituitary-thyroid axis⁶. The underlying causes of various abnormal thyroid functions in the newborn include the free placental transfer of

thyroid stimulating hormone (TSH) receptor antibodies (stimulating and blocking), transfer of anti-thyroid drugs and excessive transfer of free thyroxin (fT₄) across the placenta. In the present case, congenital thyrotoxicosis in the neonate is associated with congenital glaucoma and, so far our knowledge goes, it is the first case of congenital thyrotoxicosis with congenital glaucoma reported in Bangladesh.

Case history

A 9 days old female baby, 3rd issue of a consanguineous parent from Nowdapara, Rajshahi was admitted in Paediatrics unit 2 ward no. 27 on the 9th march 2005 with the complaints of protrusion of both eye balls from birth, unable to gain weight despite good appetite and hyper activeness from birth.

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The mother, 25 years old lady, had a swelling in front of her neck for 2 years. For last one year including 10 months of her pregnancy period she developed frequent diarrhoea, heat intolerance, excessive sweating, palpitation & gradual weight loss. She also complained of gradual protrusion of her both eyeballs for last 1 year but did not get any treatment for this. At about 34 weeks of pregnancy, she delivered a premature low birth weight baby by normal vaginal delivery at home. The baby cried just after birth & fed on breast milk. The mother noticed protrusion of both eyeballs of her baby at the time of birth. The mother had 3 issues. The eldest one was a boy 5 years old and did not have such type of disease. The 2nd issue was also a boy born with protrusion of both eyeballs & died on the 14th day of life due to severe pneumonia according to mother's statement. The baby was hyperactive & unusually alert but not extremely restless & irritable. The 3rd issue, subject of this case report, was a girl with gestational age of 34 weeks and birth weight of 1.75 kg, which was below 3rd centile of NCHS (National Centre Health Statistics) chart. Z score of -3.5 (weight for age) which indicates LBW with severe wasting. Length was 44cm, which was below 3rd centile of NCHS chart. Z score of -4.5 (height for age) indicates short stature. OFC (occipito-frontal circumference) was 30 cm, anterior fontanelle was open but small in size indicating microcephaly with premature craniosynostosis. The body temperature was 99^oF, skin-moist, heart rate-180/m; respiratory rate-75/m. Liver was enlarged 6 cm from right costal margin in mid clavicular line, firm, and non-tender with smooth surface.

Heart showed no cardiomegaly and had no murmur. Ophthalmic examination revealed exophthalmos of both eyes axially of 2mm which was measured in Hertel exophthalmometer. Visual acuity-baby was unable to follow light in any direction.

Intraocular pressure (IOP): 42.1 mmHg in right eye & 38.2 mmHg in left eye (measured by Schiotz tonometer).

Corneal diameter: - Vertical meridian-12.5mm in both eye & Horizontal meridian-13mm in both eye.

Gonioscopy: not done due to lack of facility.

Corneal oedema was present and Haab striae seen in right eye.

Optic disc not visualized, the eye appeared blue.

Thyroid function tests

Baby:

T₃-8.09 n mol/L

T₄-309.0 n mol/L

TSH-0.16 mU/L

Mother:

T₃-2.35 n mol/L

T₄180.0 n mol/L

TSH-0.4 mU/L

The above features suggested hyperactive, restless & irritable preterm, LBW baby with tachycardia, warm skin, hepatomegaly, microcephaly, premature craniosynostosis, and excessive weight loss despite good appetite. Eye signs were axial proptosis with high IOP, increased corneal diameter with Haab striae. Analysis of thyroid function test revealed increased activity of thyroid gland.

The mother also had features of thyrotoxicosis with exophthalmos. All these features suggested congenital thyrotoxicosis associated with congenital glaucoma due to maternal thyrotoxicosis (Grave's disease).



Fig. 1: Shows congenital neonatal thyrotoxicosis with congenital glaucoma.



Fig. 2: Thyrotoxic mother shows goiter with exophthalmos.

Discussion

In this case, abnormal thyroid function was seen in the baby born to thyrotoxic mother and manifested neonatal thyrotoxicosis. Thyrotoxic mothers (Grave's disease) have increased thyroid stimulating antibodies (TSI) which can be transmitted trans-placentally causing neonatal thyrotoxicosis with exophthalmus⁹. Adverse maternal and fetal outcome were related to degree of control of hyperthyroidism². Maternal hyperthyroidism was totally uncontrolled during pregnancy in our case. So the baby was preterm with LBW and had features of hyperthyroidism with exophthalmos. Uncontrolled maternal hyperthyroidism during pregnancy may also be associated with increased incidence of congenital malformation which could be the probable cause of congenital glaucoma in our patient⁵.

Congenital hyperthyroidism has a significant death rate in neonatal period.⁷ Treatment with iodides or methimazole and beta adrenergic blocking drugs were given for thyrotoxicosis and congenital glaucoma after consultation with an ophthalmologist. Radio active iodine (I^{131}) ablation of thyroid gland and thyroidectomy were not considered because our patient was a neonate as such treatment is suitable for children⁸.

Conclusion

Proper antenatal care of the mother and fetus is essential in mothers suffering from thyrotoxicosis.

Mothers should be given antithyroid drugs during gestational period so that unwanted events of congenital thyrotoxicosis with other congenital malformations like congenital glaucoma could be prevented.

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