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## Do preterm neonates require thyroxine replacement?

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**Context:** Debate still exists about the necessity of thyroxine replacement in hypothyroxinaemic preterm neonates. The dilemma is that delaying replacement will impair growth and development, especially neurological development while early replacement may have adverse metabolic effect resulting from increased oxygen consumption of preterm newborns suffering from hypoxia. Moreover once replacement is initiated, it may injudiciously be used for prolonged period.

**Background:** Transient hypothyroxinaemia is the most common thyroid dysfunction in preterm post-natals and is characterized by low sera levels of T<sub>4</sub> and FT<sub>4</sub>. The aetiology is not clear, but may have been due to the withdrawal of maternal placental T4 transfer, expression of temporary HPT axis immaturity, or a non-thyroidal illness. The problem is reported to be present in majority of infants born at less than 30 weeks gestation and is associated with increases in perinatal mortality and morbidity as well as later neuro-developmental deficits.

**Objectives:** To compare thyroid function in preterm and term neonates and to observe whether preterm neonates with hypothyroxinaemia need thyroxine replacement at the earliest or the treatment may as well be started, with proper follow ups, at about 6 weeks.

**Methods:** An observational study was done during the period of July 2008 to June 2010 in the neonatal and postnatal unit of the Chittagong Medical College Hospital. It focuses on comparison of thyroid function (FT<sub>4</sub> and TSH) between preterm and term neonates aged average 7 days with all samples collected after 5 days of life, the time when postnatal TSH surge disappears. One hundred (100) preterm and 50 term infants were selected by convenient sampling. Preterm infants were stratified by post-conceptional age. FT<sub>4</sub> and TSH estimation were done by the 3<sup>rd</sup> generation two site chemiluminescent immunometric assay. Serum levels of FT<sub>4</sub> and TSH of preterm infants were followed after 6th week (45-50 days) of their age and were compared with their 1st samples (5-11 days).

**Results:** The FT<sub>4</sub> level correlated positively with gestational age ( $p < 0.0001$ ,  $n = 150$ ,  $r = 0.61$ ) and differed significantly between adjacent gestational age groups ( $p = 0.0001$ ). No significant differences were found in TSH levels of such age groups of the preterms. TSH level correlated positively with gestational age in the 1<sup>st</sup> samples but in the 2<sup>nd</sup> samples significant negative correlation was observed suggesting HPT axis maturity. In preterm neonates subgroup analysis showed highly significant difference in FT<sub>4</sub> and TSH levels between 1<sup>st</sup> and 2<sup>nd</sup> samples.

**Conclusion:** In preterm infants born at <28 weeks' gestation, it usually takes more than one month for FT<sub>4</sub> levels to reach level equal to those of term infants. In this study, FT<sub>4</sub> levels were found to increase in all infants who had initial hypothyroxinaemia and did not receive thyroxine supplementation during the first 6 weeks of postnatal life. This indicates that thyroxine supplementation should be considered if free T<sub>4</sub> levels are persistently low after the first 6 weeks of birth. Further studies are needed before clinical application of this finding.

## Biography

Jhulan Das Sharma obtained his MBBS in 1976, FCPS (Fellow of College of Physicians & Surgeons) and MD (Doctor of Medicine) & PhD in 1976, 1990, 1998 & 2010 respectively. He worked as Assistant Professor in Pediatrics since 1993 to work in different Medical Colleges of Bangladesh including Institute of Postgraduate Medicine & Research, Dhaka. He worked as Associate Professor since 1999 and presently working as Professor of Pediatrics in Southern Medical College, Chittagong from January 2011. He is involved in teaching and examination of undergraduate & postgraduate examinations for last 15 years. He has 35 publications in different journals.

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