

Simplifying Strategies to Enable Universal, Decentralized Cord Blood TSH Screening: Lessons from a Tertiary Care Center in North India

Original Article

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ABSTRACT

OBJECTIVES

To analyze the utility of cord blood thyroid stimulating hormone (CBTSH) for improving the universal newborn screening (UNBS) strategy, and to generate regional normative data.

METHODS

Data of UNBS using CBTSH and cord blood free thyroxine (CBfT4) over two years (01 April 2022 to 31 March 2024) in all inborn deliveries was analyzed using descriptive statistics.

RESULTS

Out of 2218 neonates delivered to 2094 mothers, data was available for 2116 newborns (54.4% males; 68.2% term gestation; 27%, 3.5%, and 0.9% late, early and extreme preemies, respectively; 61% appropriate-for-gestational age). The mean (SD) CBTSH was 7 (5.3) mIU/L (3rd-97th percentiles: 2.6-18.8 mIU/ml); higher in extreme preterms, extremely low birth weight (< 1000 g) and sick babies. Mean (SD) cord blood free thyroxine (CBfT4) was 0.99 (0.2) ng/dL (3rd-97th percentiles: 0.7-1.4 ng/dL), lower in extreme preterms. 58 newborns (recall rate 2.7%) had CBTSH > 20 mIU/L (all had normal CBfT4) and were recalled: 5 did not return, 52/53 were normal on retesting. Only 2/58 newborns had CBTSH > 40 mIU/L: one had confirmed CH. With CBTSH cutoff > 40 mIU/L, recall rate could have been reduced to 0.09%.

CONCLUSION

We propose simplified screening strategies of “retest and recall”, and using three CBTSH categories, i.e., (a) < 20 mIU/L: normal, discharge; (b) 20-40 mIU/L: test CBfT4, if < 0.7 ng/dL, do confirmatory venous TSH & fT4 at 72 h age (before discharge); (c) > 40 mIU/L: confirmatory venous TSH & fT4 at 72 h (before discharge): if venous TSH < 20 mIU/L: normal; TSH 20-40 mIU/L or fT4 < 0.7 ng/dL: recall and retest at 7-10 days age. If confirmatory venous TSH is high or fT4 is low, start replacement. This would improve decision-making and minimize burden of unnecessary recalls while ensuring early identification.

Keywords: Congenital hypothyroidism · Cord blood TSH · Universal newborn screening

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