

The difference between cord and filter paper TSH level in congenital hypothyroidism screening programme

Al-Juraibah F , Al-Othaim A , Al-Eyaid W , Al-Mutair A

Department of pediatric, king Abdulaziz Medical City, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia.



BACKGROUND

Neonatal thyroid screening is considered one of the best cost-effective tool to prevent mental retardation in population. Different strategies are suggested for thyroid hormone estimation in the sample obtained at birth using cord blood or later in neonatal period. In King Abdulaziz Medical City, cord Thyroid stimulating hormone (TSH) is the screening tool to detect congenital hypothyroidism cases with a cut off value of 30 MIU/L considered positive result. In 2011, newborn screening program was started and thyroid stimulation hormone (TSH) in heel prick with a cut-off value of 20 uU/L was part of the program

METHODS

All deliveries conducted at King Abdulaziz Medical City in Riyadh region KSA during the period from May 2011 to May 2013 were included in this study. Both cord blood and heel stick samples for thyroid stimulating hormone (TSH) were collected from each delivery for screening. Cord TSH more than 30 MIU/L was taken as positive (level between 30-60 MIU/L was confirmed by measuring cord FT4 if level more than 9 pmol/L considered normal otherwise, patient recalled and peripheral venous sample was taken for confirmation), any heel stick sample more than 20 uU/L was considered positive and baby was recalled

RESULTS

A total of 17729 neonates were screened, of those 7 were diagnosed to have congenital hypothyroidism (Table). All of the cases were detected by both cord and heel stick TSH level. 305 neonates had positive heel-stick TSH result (sensitivity 100%, specificity 98.32% and recall rate was 1.7%), 88 neonates had positive cord TSH result (sensitivity 100% , specificity 99.55% and recall rate was 0.056%)

OBJECTIVES

The aim of this study is to compare the sensitivity and specificity of cord blood TSH and heel stick TSH in detecting congenital hypothyroidism

Case #	Gender	Cord TSH (MIU/L)	NSP (mU/mL)	Etiology
1	F	106.287	83	Ectopic
2	F	742.854	434	Dyshormogenesis
3	M	52.878	36.3	No imaging
4	F	50.55	51.9	Expired at 6 days of age
5	F	105.652	141.7	Ectopic
6	F	89.001	104	Ectopic
7	M	473.604	349	Agenesis

CONCLUSION

Both cord and heel-stick TSH detects all the cases of congenital hypothyroidism. Cord TSH is superior to heel stick as false positive rate was around three times higher in heel stick compared with cord TSH

REFERENCES

1. Hardy J.D. Cord blood thyroxin and thyroid stimulating hormone screening for congenital hypothyroidism. J of Pediatric endocrinology &metabolism 2008; 21, 245-249
2. Leger J, European Society for Paediatric Endocrinology Consensus Guidelines on Screening, Diagnosis, and Management of Congenital Hypothyroidism. J Clin Endocrinol Metab; 2014 Feb; 99(2): 363-384.
3. Walfish PG. Evaluation of three thyroid function screening tests for detecting neonatal hypothyroidism. Lancet 1976; i: 1208-1210.

JURAIBAHF@NGHA.MED.SA

