

International Conference on

AESTHETIC MEDICINE AND ENT

July 06-08, 2017 Kuala Lumpur, Malaysia

Auditory brainstem response improvements in hyperbilirubinemic infants

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Background & Objectives: Hyperbilirubinemia in infants have been associated with neuronal damage including in the auditory system. Some researchers have suggested that the bilirubin-induced auditory neuronal damages may be temporary and reversible. This study was aimed at investigating the auditory neuropathy and reversibility of auditory abnormalities in hyperbilirubinemic infants.

Subjects & Methods: The study participants included 41 full term hyperbilirubinemic infants (mean age 39.24 days) with normal birth weight (3,200-3,700 grams) that admitted in hospital for hyperbilirubinemia and 39 normal infants (mean age 35.54 days) without any hyperbilirubinemia or other hearing loss risk factors for ruling out maturational changes. All infants in hyperbilirubinemic group had serum bilirubin level more than 20 milligram per deciliter and undergone one blood exchange transfusion. Hearing evaluation for each infant was conducted twice: The first one after hyperbilirubinemia treatment and before leaving hospital and the second one three months after the first hearing evaluation. Hearing evaluations included transient evoked otoacoustic emission (TEOAE) screening and auditory brainstem response (ABR) threshold tracing.

Results: The TEOAE and ABR results of control group and TEOAE results of the hyperbilirubinemic group did not change significantly from the first to the second evaluation. However, the ABR results of the hyperbilirubinemic group improved significantly from the first to the second assessment ($p=0.025$).

Conclusions: The results suggest that the bilirubin induced auditory neuronal damage can be reversible over time so we suggest that infants with hyperbilirubinemia who fail the first hearing tests should be reevaluated after 3 months of treatment.

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