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Association between serum magnesium and serum bilirubin levels in neonates

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Introduction: Unconjugated bilirubin is known to cause neurotoxicity by causing neuronal injury as it has the affinity to phospholipids of the plasma membrane. Plasma membrane structures such as N-methyl-D-aspartate (NMDA) receptor/ion channel complex located within neuronal membranes on the synaptic surface of neurons are disrupted by prolonged activation. This Bilirubin-induced neurotoxicity may share common features with HIE-induced brain injury by mechanisms mediated by the NMDA receptor. NMDA antagonist might help in blocking this injury. Magnesium (Mg) ion, is one of the most important antagonistic regulators of the NMDA receptor. It protects the CNS against hypoxia and exerts its neuroprotective effects by blocking excitotoxic and NMDA receptor-mediated neuronal injury mechanisms. So this study is taken up to know the magnesium relationship with bilirubin levels in the neonate.

Aims and Objectives: Association between neonatal hyperbilirubinemia and serum magnesium levels; Serum magnesium levels in hemolytic disease of newborn vs. non hemolytic disease of newborn with hyperbilirubinemia.

Methodology: Case control study on 100 neonates as cases and 100 controls which are being matched, serum bilirubin levels measured along with serum magnesium levels. Conducted in KIMS hospital Bangalore, India. For a period of 1 year May 2018 to May 2019.

Results: In this study it was noticed that cases had higher magnesium levels (avg: 2.8mg/dl) along with serum bilirubin (avg: 15mg/dl) than controls and magnesium levels were higher in hemolytic disease of newborn than non hemolytic disease of newborn.

Conclusion: In conclusion, there is a positive correlation between plasma Mg levels and severity of hyperbilirubinemia in new-borns; it could be a neuroprotective compensatory mechanism to reduce bilirubin toxicity. And also in hemolytic disease of newborn, magnesium levels were much higher. So this relationship and interactions between serum Magnesium levels and hyperbilirubinemia will make it possible to use cord blood or early postnatal Mg measurements in predicting the development of significant hyperbilirubinemia and questioning the value of Mg treatment in the therapy of neonatal hyperbilirubinemia.

Biography

Nannapaneni Meghana currently pursuing my Masters in Pediatrics from the prestigious Rajiv Gandhi University of Health Sciences, Bengaluru, India. I was honoured for securing distinctions in ophthalmology and otolaryngology and my prime area of interest has always been Neonatology. As a post graduate student, I have proactively presented oral papers and poster presentations in my State and National conferences and had received an award for an oral paper presentation in the state. When I am not into books and patients I take timeout for sports like tennis and swimming. I have always been fascinated by how medicine is evolving and wanted to make my own contribution to it specifically in the field of Neonatology and be a Beacon of inspiration to my predecessors.

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