THE EFFECT OF URSODEOXYCHOLIC ACID IN ADDITION TO PHOTOTHERAPY ON THE REDUCTION OF TOTAL SERUM BILIRUBIN LEVEL AMONG NEONATES WITH INDIRECT HYPERBILIRUBINEMIA: A META-ANALYSIS

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Background: Increasing level of indirect bilirubin can be neurotoxic and can cause irreversible mental damage to neonates if not managed and prevented timely and appropriately. Currently, the standard treatment is phototherapy but adjunctive therapies are being investigated to hasten the rate of decrease of bilirubin levels. Thus, Ursodeoxycholic acid (UDCA) as a new therapeutic approach that enhance bile flow and decrease bilirubin level can be a valuable pharmacologic intervention.

Objective: To determine the effect of UDCA in reducing total serum bilirubin (TSB) levels of neonates with indirect hyperbilirubinemia receiving phototherapy.

Design: Meta-analysis

Subjects: Randomized controlled trials which included neonates with indirect hyperbilirubinemia not due to sepsis, blood group incompatibilities, glucose-6-phosphate dehydrogenase deficiency or other diseases leading to hyperbilirubinemia.

Methodology: Medical Subject Headings (MeSH) employed were: “effect”, “Ursodeoxycholic Acid”, “UDCA”, “indirect hyperbilirubinemia”, “phototherapy”, and “neonate”. Studies included were published from 2015 until 2020 that evaluated the effect of UDCA with phototherapy in decreasing total serum bilirubin (TSB) levels of neonates with indirect hyperbilirubinemia.

Statistical Analysis: Pooled estimates of Mean Differences (MD) of TSB levels, and hours on phototherapy were computed with 95% confidence intervals (CI) to determine differences between the two groups. Random effects model to estimate individual effect measures, funnel plot analysis to assess publication bias, and I^2 statistics to assess for heterogeneity were employed.

Results: A total of 10 studies were included. The pooled results indicated significantly lower mean TSB levels at 24 hours (p-value=0.0002) and 48 hours (p-value<0.0001), and lower mean duration of phototherapy (p-value=0.0002) in those given UDCA.

Conclusion: UDCA in combination with phototherapy showed a significantly lower TSB level and shorter duration of phototherapy. No short-term adverse effect was reported.