



Effect of Fenofibrate on Neonatal Hyperbilirubinemia: A Systematic Review and Meta-analysis

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Abstract-Jaundice is one of the most common neonatal complications. Therefore, promptly diagnosing and treating it is vital. This study aimed to determine the effect of Fenofibrate and phototherapy compared to the phototherapy alone on total serum bilirubin (TSB) at 24 and 48 h (primary outcome) and side effects (secondary outcome).

Methods: English (Cochrane Library, Web of Science, Medline, CINAHL, PsycINFO, PubMed, and Google Scholar) and Persian (SID and Magiran) databases were searched using verified keywords (MeSH library) without time constraint. The risk of bias was assessed using the Cochrane Handbook. RevMan software (version 5.3) was used for meta-analysis and the mean difference was calculated as effect size. In heterogeneous cases, the random effect was reported instead of the fixed one.

Results: The total number of studies found in all databases was 5482. Six articles were included in the present study. The results of the meta-analysis showed no statistically significant difference in TSB levels within 24 (Mean difference: -5.56; 95% Confidence Interval (95% CI): 4.53 to -16.05; $P = 0.27$) and 48 h (-4.77; 2.57 to -12.10; $P = 0.20$) between Fenofibrate with phototherapy group and the phototherapy alone group. No side effects have been reported in included studies.

Conclusion: Although the results of the five studies showed the significant effect of Fenofibrate as adjuvant therapy on reducing TSB level, the meta-analysis failed to show the same result in the study groups. It is recommended to perform more trials following all principles of randomized controlled trials to find an effective treatment for hyperbilirubinemia.

Keywords: Fenofibrate, Jaundice, Neonatal hyperbilirubinemia

Introduction (Heading 1)

Introduction Neonatal jaundice or icterus was discovered years ago which refers to a bilirubin level > 5 mg/dL. Neonatal jaundice is very common among term infants. Sixty percent of term infants and 80% of preterm infants develop jaundice, which usually appears one week after birth. The normal bilirubin level of the umbilical cord is 1-3 mg/dL, which increases to 5-6 mg/dL on the second to fourth days after birth and decreases to less than 2 mg/dL on the 5th to 7th days after birth. Hyperbilirubinemia is caused by an accumulation of bilirubin in the blood due to increased degradation of red blood cells and decreased excretion of unconjugated BILIRUBIN. Normally, circulating red blood cells are destroyed and heme moiety is converted to the water soluble form of bilirubin and excreted in the intestine through the bile. Neonates cannot convert the red blood cell bilirubin to a soluble form and excrete it from the body.

Visual inspection (touching the infant's skin and assessing skin color) is one of the simplest ways to diagnose neonatal jaundice; however, it is not enough. Bilirubin level should be measured in all infants with jaundice using a transcutaneous bilirubin meter, which is a non-invasive method in infants

with a gestational age of > 35 weeks within 24 h after birth.