

Effects of SMOFLIPID® vs. INTRALIPID® on liver enzyme changes in patients with chronic liver disease

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Introduction:

Intravenous lipid emulsions (ILE) play an integral role in parenteral nutrition (PN) by providing a balanced source of calories and essential fatty acids. Existing literature has shown that composition of ILE may have immunomodulatory effects which can negatively impact liver function. Combination lipids, such as Smoflipid®, contain less soybean oil and include other oils which are less pro-inflammatory and have shown to have a more favorable impact on liver enzymes when compared to soy-based ILE in patients with intact hepatic function. The purpose of this study was to compare the median change in liver enzymes (AST and ALT) in patients with chronic liver disease who received PN with Smoflipid® vs. Intralipid® from initiation of ILE out to day seven.

Materials and Methods:

This was a retrospective, single-center, cohort study of patients with chronic liver disease who received ILE therapy in conjunction with PN. A bivariate analysis was performed to evaluate the primary endpoint of median change in ALT and AST from start of ILE out to day seven. Secondary endpoints included change in total bilirubin, newly diagnosed infections out to 14 days post initiation of ILE therapy, change in MELD-Na scores during the study timeframe, and length of stay.

Results:

Ninety-nine patients with chronic liver disease met inclusion criteria and received ILE therapy while on PN. Of these, 54 received Smoflipid® and 45 received Intralipid®. The median (interquartile range) MELD-Na score at initiation of ILE therapy was 29.3 (17.7 – 35.9) vs. 21.7 (15.4 – 34.9); $p=0.44$ in the Smoflipid® and Intralipid® arms, respectively. There was no statistical median difference in AST [12 units/L (-16 – 38) vs. 6 units/L (-7 – 25); $p=0.87$] or ALT [5 units/L (-2 – 17) vs. 2 units/L (-7 – 16); $p=0.40$] from start of ILE therapy out to day seven. There were no significant differences in any secondary endpoints.

Conclusions:

In patients with chronic liver disease who received PN therapy with Smoflipid® vs. Intralipid®, there was no statistical or clinical difference in the change in liver enzymes from the start of ILE therapy out to day seven. Further, long-term studies are needed to elucidate the impact of prolonged ILE therapy on liver enzymes in chronic liver disease.