Intravenous Laser Irradiation Improves Metabolic Markers in Patients With Hyperlipidemia

Key Takeaways

- ILIB demonstrated significant triglyceride reduction in dyslipidemia patients, with minor changes in total cholesterol and LDL-C levels.
- The therapy may benefit high-risk patients with elevated baseline lipid levels, suggesting a normalization effect.
- ILIB's triglyceride-lowering effect may be mediated by improved skeletal muscle perfusion and enhanced lipoprotein lipase activity.
- The study supports ILIB as a potential adjunctive therapy for hyperlipidemia, especially for those with suboptimal responses to conventional treatments.

Intravenous laser irradiation of blood shows promise in lowering triglycerides and improving lipid profiles in patients with dyslipidemia.

In patients with dyslipidemia, particularly those with elevated triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), and total cholesterol, intravenous laser irradiation of the blood (ILIB) demonstrated significant lipid-lowering effects, according to new research published by investigators in the journal In Vivo.[1]

What is Intravenous Laser Irradiation of Blood?

ILIB involves low-intensity laser light being introduced directly into the bloodstream to modulate blood components. The goal of ILIB is to enhance erythrocyte deformability, improve oxygen transport efficiency, and decrease oxidative stress, which in turn improves the function of a patient’s cellular metabolism.[1]

Past research efforts have demonstrated the potential of ILIB as an adjunctive treatment to modify metabolic indicators, including lipid profiles. One integrative review found that ILIB had a therapeutic effect on chronic systemic diseases. Another review demonstrated beneficial effects of ILIB in both animal and human studies on lung diseases, characterized by reductions in the inflammatory cascade and hospitalization periods.[2,3]

However, the impacts of ILIB have yet to be evaluated in key metabolic parameters, including lipid profiles and blood glucose. Innovative methods of lowering LDL-C and improving metabolic parameters are increasingly necessary as rates of hypercholesterolemia increase across the world. Furthermore, pharmacologic therapies for lipid lowering are increasing in their effectiveness and capabilities, but many patients still do not reach recommended lipid levels.[4,5]

How Did ILIB Impact Lipid Levels?

In the current trial, the study investigators evaluated changes in metabolic parameters in patients receiving ILIB therapy. Subgroup analyses were employed in patients with abnormal values of metabolic parameters to assess the potential clinical benefits of ILIB in high-risk populations. Additional analyses were performed on patients within normal ranges, allowing for a comprehensive assessment of therapeutic responses across varying baseline statuses.[1]

How Did ILIB Impact Lipid Levels?

In the current trial, the study investigators evaluated changes in metabolic parameters in patients receiving ILIB therapy. Subgroup analyses were employed in patients with abnormal values of metabolic parameters to assess the potential clinical benefits of ILIB in high-risk populations. Additional analyses were performed on patients within normal ranges, allowing for a comprehensive assessment of therapeutic responses across varying baseline statuses.[1]

A total of 60 patients met inclusion criteria and were enrolled in the trial. Average treatment duration among participants was 138 days, with an average of about 9.93 treatment sessions, according to the study authors.[1]

After comparing test results before and after treatment, only triglyceride levels demonstrated a major reduction, decreasing from a mean of 167.80 mg/dL to 118.84 mg/dL (P = .001). Parameters such as total cholesterol and LDL did not demonstrate statistically significant differences before and after treatment; however, reductions across the key parameters were reported, including a reduction in total cholesterol by an average of 6.95 mg/dL (1.96%). LDL exhibited an average decrease of 0.32 mg/dL, while glucose increased by an average of 0.36 mg/dL.[1]

What Do These Results Mean for Lipid Control?

Despite the minimal reductions, comparing lipid profiles before and after ILIB therapy demonstrated significant lipid-lowering effects in participants with abnormally elevated baseline levels. Patients with LDL-C higher than 130 mg/dL experienced a significant decrease posttreatment, although no major difference was observed in patients with levels of 130 mg/dL or lower, suggesting a normalization effect on lipid levels. Moreover, total cholesterol meaningfully decreased in patients with baseline values higher than 200 mg/dL but remained unchanged in patients with baseline values of 200 mg/dL or less.[1]

The results suggest that ILIB could have a meaningful impact on metabolic markers in patients with varying baseline lipid profiles, especially inpatients at high risk. The study authors discussed that the triglyceride-lowering effect of ILIB could be mediated in part through improved skeletal muscle perfusion and enhanced lipoprotein lipase activity, which promotes triglyceride hydrolysis.[1]

Regarding the cholesterol-lowering effects, the study authors hypothesized that they are related to the increase in hepatocyte LDL receptor expression as hepatic cholesterol content decreases. The selective benefit observed in high-risk patients suggests the potential for ILIB to be used as

an adjunctive therapy for patients who respond poorly to or cannot tolerate conventional treatments. The lack of impact on glycemic indices (eg, fasting glucose) implies that the metabolic action may preferentially target lipid regulation, though this needs further investigation.[1]

"This study supports the potential of ILIB as an adjunctive therapy for hyperlipidemia, especially in individuals with suboptimal responses to conventional treatments," the study authors concluded. "Future studies with larger sample sizes, randomized controlled designs, and standardized treatment protocols are warranted to further confirm and expand upon the present findings."[1]

REFERENCES

1. Huang C, Lee CY, Chiang I, et al. Effects of intravenous laser irradiation of blood on metabolic markers in patients with hyperlipidemia: A retrospective pilot study. In Vivo. 2026;40(1):495-501. doi:10.21873/invivo.14213
2. Tome RFF, Silva DFB, Santos CAOD, et al. ILIB (intravascular laser irradiation of blood) as an adjuvant therapy in the treatment of patients with chronic systemic diseases-an integrative literature review. Lasers Med Sci. 2020;35(9):1899-1907. doi: 10.1007/s10103-020-03100-4
3. Schapochnik A, Alonso PT, Souza VD, et al. Intravascular laser irradiation of blood (ILIB) used to treat lung diseases: A short critical review. Lasers Med Sci. 2023;38(1):93. doi:10.1007/s10103-023-03750-0
4. Halpern L. Electronic health messaging improves diagnosis, management of patients with high cholesterol. Pharmacy Times. Published December 4, 2025. Accessed January 5, 2026. https://www.pharmacytimes.com/view/electronic-health-messaging-improves-diagnosis-management-of-patients-with-high-cholesterol
5. Abbasi S, Khan A, Choudhry MW, et al. New insights into the treatment of hyperlipidemia: Pharmacological updates and emerging treatments. Cureus. 2024;16(6):e63078. doi:10.7759/cureus.63078

News Source:

https://www.pharmacytimes.com/view/intravenous-laser-irradiation-improves-metabolic-markers-in-patients-with-hyperlipidemia