The Hypoglycemic Effect of Intravenous Laser Therapy in Diabetic Mellitus Type 2 Patients; A Systematic Review and Meta-analyses

Abstract

Objectives: Intravenous Laser Blood Irradiation (ILBI) is applied in some countries for the treatment of different diseases including diabetes mellitus. But there is not any systematic review available in this field. The aim of this study is to review the articles on the effects of ILIB in diabetic type 2 patients systematically.

Material and Methods: A search was conducted on PubMed, SciELO, Science Direct and Google Scholar databases to find relevant articles on ILIB. This search was restricted to articles published in English and from the unrestricted past till April 2015. The keywords used were “Intravascular laser”, “Intravenous laser”, “low level laser”, “low intensity laser”, “phototherapy”, “cold laser” combined with “fasting blood glucose”, “blood sugar” and “blood glucose”.

Results: Seven potentially suitable articles were found and among them four articles met all inclusion criteria. All these 4 articles were included in the final meta-analysis. Comparing before and after laser therapy, showed a significant decrease in glucose level (mean difference = 14.445, 95% CI: −1.12 to 30.031, P=0.007). There was not any significant heterogeneity between trials (P=0.158, I²=42.3%).

Conclusion: ILIB is a safe and effective therapeutic modality for decreasing blood sugar level in diabetic type 2 patient.

Keywords: Intravenous laser; FBG; Systematic review

Introduction

During past 40 years, Low-level Laser Therapy (LLLT) has been broadly used in medical fields. Recently, there has been an increase in the clinical applications of low-level laser irradiation in various therapeutic fields. One of the methods for irradiation of laser is Intravenous or (ILBI) with red, UV, and blue light, which is widely applied in the treatment of different pathologies. Blood irradiation therapy can be administered through a catheter in a vein, usually a vein in the forearm. The medical effects are mainly systemic healing mechanisms including analgesic, biostimulative, immunocorrective, antibacterial, anti-allergic, antitoxic, vasodilative, antiarrhythmic, antihypoxic, spasmolytic, anti-inflammatory, and other properties.

ILIB reduces glucose, cholesterol, low-density, and very low density lipoproteins (VLDL) and alleviates immune and hormonal system status. As ILBI has systematic effects, it can be a proper therapeutic modality in complex diseases like diabetes mellitus. Diabetes is a pathological metabolic state caused by...
Materials and Methods

Aiming to review the effects of ILIB in diabetic type 2 patients, we designed this study as there is not any systematic review available in the field of the use of laser therapy for diabetes. We aimed to systematically review these articles and provide evidence to assist clinical practice. The methods used in this review are based on the guidelines provided by the Cochrane collaboration 

As there is not any systematic review available in the field of the use of laser therapy for diabetes, we aimed to systematically review these articles and provide evidence to assist clinical practice. The methods used in this review are based on the guidelines provided by the Cochrane collaboration.

The detailed characteristics of these trials are summarized in Table 1.
Compared with the before laser therapy, the pooled estimate showed a significant decrease in glucose level (Mean difference = 14.445, 95% CI: −1.12 to 30.03, p=0.007; Figure 1). There was not any significant heterogeneity between trials (P=0.158, I²=42.3%). There was no significant publication bias as evidenced by the Begg’s test and Egger’s test (all P>0.05).

Discussion

The result of this meta-analysis suggests that Intravenous laser therapy decreases blood glucose level in diabetic type 2 patients significantly. Immediately after ILIB blood glucose decreases 14 mgr/dl. It seems that laser irradiation may have an effect on arginine and increase nitric oxide (NO) production. Arginine affects on the release of hormone like glucagon, insulin, prolactin, adrenal catecholamins and growth hormone [9]. It decreases tissue hypoxia, stimulates oxygenation and normalizes tissue metabolism [10]. Ramadawon concluded that even in advanced cases of diabetes mellitus, laser therapy could restore the 2H3251H2425, 0H13493245, 0H2314265 between diabetes. It could be recommended to include these factors for future systematic reviews.

Since results from this meta-regression find intravenous laser therapy as an effective way to decrease blood sugar level in diabetic patients it could be suggested to prescribe this kind of therapy for patients with type 2 diabetes along with other classic methods such as diet, weight control, medications and exercise to gain benefits on glycemic control [21,22].

It is recommended that future RCTs with proper control groups and descriptions of adequate information should be conducted. Despite no significant publication bias was detected by the Begg’s test and Egger’s test, the risk of publication bias still cannot be fully ruled out due to the language restriction to English, the selection of only published papers, as well as the potentially underpowered statistical tests.

In conclusion, the meta-analysis shows that Intravenous laser therapy is associated with a decreased blood sugar level among patients with type 2 diabetes.
patients with type 2 diabetes. As the selected studies evaluate the effects of intravenous laser for a short period of time, it seems more studies are needed to assess the long term effects. Future RCTs with head-to-head designs comparing intravenous laser therapy versus hyperglycemia control drugs, and with extended length of interventions (6 months) and with assessing more health related outcomes, are required to strengthen the findings in this meta-analysis.

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