Low-level laser therapy to the bone marrow for stimulation of stem cells homing in the heart post myocardial infarction in humans-safety and feasibility study

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Recently, it was demonstrated that Low-level laser therapy(LLLT) to the bone marrow(BM) markedly reduce scarring porcine experimental model of MI. The aim of the present study was to follow the short and long term safety and feasibility effects of the application of to the in 30 humans post- MI. LLLT (diode infrared laser at an optimal power output) was applied to the tibial bone for 100 sec non-invasively before balloon catheterization. Consecutive application of LLLT was performed 24 and 72 hrs post MI. ECHO was taken within the first 24 hrs post MI and at 1 and 9 month post MI. Blood test revealed that platelets and leukocytes counts in the laser treated patients were not elevated during the first week after MI as compared to admission levels. Furthermore there were no statistical differences in their levels between the laser treated patients group and the placebo group. Also the application of LLLT did not affect the door to balloon time. No other adverse effects were observed in the patients that received the laser treatment. The possible efficacy of the LLLT on the heart function as evaluated by ECHO will be discussed. It is concluded that LLLT to BM for photo biostimulation of stem cells for the benefit of the infracted heart is a safe procedure in humans and a novel approach in cell therapy that avoids the need to isolate stem cells, grow them in vitro and inject them back to the patients.