

# Investigation into the Effectiveness of Shockwave Treatment for Angina Pectoris Patients Post-Bypass Surgery

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**Background:** The effectiveness of shock wave based, angiogenesis therapy for patients with ischemic disease has been confirmed in basic experimentation, yet effectiveness in a clinical setting is yet to be fully clarified. Therefore, an investigation was undertaken to determine the effectiveness of shock wave treatment for post-bypass ischemic patients, given that patients that are no longer suitable for coronary intervention or a further bypass procedure.

**Method:** Target population consisted of 17 patients with ischemia post- bypass surgery. All patients underwent angiography to confirm whether coronary catheter intervention or further bypass procedures were no longer appropriate treatment options. Heart muscle scintigrams were performed in order to focus treatment on ischemic patients with viable blood vessels. The ischemic area was identified by scintigram and with three to five ischemic points selected for treatment a Cardiospec unit was used to deliver 100 shocks per location. Three treatments were performed per week, every four weeks for a total of nine treatments. A scintigram was performed at 1 and 3 month follow-up.

**Results:** All 17 patients underwent shock wave treatment. No CK, troponin elevations, arrhythmia or other side-effects were observed. Eleven patients had a previous myocardial infarction and 6 other patients presented with angina pectoris. Ten of the 17 patients observed an improvement in symptoms, with no changes in the remaining patients and none observing deterioration in condition. There was no significant change to scintigram results at 1 month follow-up for the 17 patients. At 3 month follow-up, 3 patients showed significant improvement in myocardium blood flow at rest, however there was no improvement in ischemia during exercise. All ischemic improvements determined by scintigram were exclusive of patients with myocardial infarctions, with no efficacy determined for ischemic area from prior myocardial infarctions. Five patients displayed a significant increase in VEGF one hour post shock wave treatment when measured peripheral blood.

**Conclusion:** Although improvements in symptoms for a number of patients through use of shock wave angiogenesis therapy were observed, it is necessary to exclude patients with myocardial infarction. Furthermore, a number of cases determined an increase in VEGF following shock wave treatment, and this is considered to be one of the mechanisms associated with angiogenesis.