

## Abstract PhD

**Aims:** The aim of our study was to evaluate an efficacy and safety of intra-arterial injection of bone marrow mononuclear cells (BMMCs) in patients with chronic critical limb ischemia (CLI)

**Methods.**In average 400ml bone marrow blood was harvested from posterior iliac crests in 24 CLI patients. BMMCs were obtained from the blood by standard procedure used for bone marrow transplantation. After digital subtraction angiography was performed in each patient, BMMCs were injected into arteries of 28 limbs. Primary outcome was the efficacy of BMMCs injection measured as a successful healing of limb defects, a change of Fontain ischemia grade and a rate of high limb amputations. Secondary outcomes were a safety of the BMMCs injections, changes in angiographic findings after BMMCs injections and changes in quality of life (questionnaire SF-36).

**Results:** After one year follow-up all patients were alive and 2 patients have undergone high limb amputation. Out of 14 limb defects, eleven have been healed completely and the average Fontain ischemia grade has changed from baseline value of 3.5 to 2.0 after one year ( $P < 0.0001$ ). Angiographic findings have improved in all examined segments of limb vessels. One year after the procedure patients have reported significant improvement.

**Conclusion:** The intra-arterial limb BMMCs injection decreased the expected rate of high limb amputations, improved the limb defect healing as well as the Fontain grade of limb ischemia. First we used only intra-arterial implantation of BMMCs in human model. Moreover, BMMCs injection improved the quality of life – no study before tested it. Our results should be validated in larger randomized placebo-controlled studies.