Autologous Peripheral Blood Mononuclear Cell Implantation for Patients with Peripheral Artery Disease Improves Limb Ischemia. Circulation J. 69: 1260～1265, 2005

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【Abstract】

Background  Implantation of bone–marrow mononuclear cells, including endothelial progenitor cells, into ischemic limbs has been shown to improve collateral vessel formation. We investigated the safety and feasibility of autologous peripheral blood mononuclear cells (PBMNCs) implantation after granulocyte–colony stimulating factor (G–CSF)–induced mobilization in peripheral artery disease patients.

Methods and Results  Six patients were enrolled in this study, 5 had thromboangitis obliterans and 1 had arteriosclerosis obliterans. Following administration of G–CSF (10 μg/kg/d), PBMNCs were injected into the muscle (5 lower limbs and 1 upper limb). Harvest and implantation of PBMNCs were done for 2 days for the patients with lower limb ischemia. No serious adverse events due to G–CSF administration, apheresis, and implantation were observed during this study. Improvement of ABI (ΔABI>0.1) was seen in 4 of 5 patients at 4 weeks. Ischemic ulcers on the thumb and big toe improved in 3 of 3 patients. The maximal walking distance significantly increased from 203 m to 559 m (p=0.031) at 4 weeks and was sustained for 24 weeks. Significant improvement was seen in physiological functioning subscale of Short Form–36. Conclusion  Implantation of PBMNCs collected after G–CSF administration could be an alternative strategy for therapeutic angioplasty in patients with peripheral artery disease.

Key words: peripheral blood mononuclear cells, therapeutic angiogenesis, thromboangitis obliterans, Arteriosclerosis obliterans, granulocyte–colony stimulating factor