Objectives: Waon therapy relieves ischemic symptoms in patients with peripheral arterial disease. Waon therapy increases capillary density and blood flow in ischemic hindlimbs of mice (Circ J 2006;70:463). Moreover, we have shown that Waon therapy increases capillary densities of non-infarcted myocardium of rat with myocardial infarction in association with increases in myocardial expression of eNOS and VEGF mRNA (Am J Physiol Heart Circ Physiol 2011; 301:H548). Taken together, Waon therapy may improve myocardial blood flow in patients with severe coronary artery disease. Accordingly, the purpose of the present study was to investigate whether repeated Waon therapy could improve myocardial perfusion in patients with ischemia related to chronic total occlusion (CTO) of coronary arteries.

Patients and Methods: Twenty-four patients who had myocardial ischemia in the CTO-related area were examined. The Waon group (n=16) was treated daily for 3 weeks with a 60°C far infrared-ray dry sauna bath for 15 minutes and then kept in a bed covered with blankets for 30 minutes. The severity of ischemia was quantified by thallium-201 myocardial perfusion scintigraphy with adenosine before and after 3-week Waon therapy. Treadmill exercise test, flow-mediated dilation (FMD) of the brachial artery, and the number of circulating CD34-positive bone marrow-derived cells, a putative precursor of endothelial progenitor cells, were determined. The control group (n=8) underwent myocardial perfusion scintigraphy twice with a 3-week interval.

Results: In the control group, neither summed stress score (SSS) nor summed difference score (SDS) of myocardial scintigraphy changed. However, Waon therapy improved both SSS (16 ± 7 to 9 ± 6, p<0.01) and SDS (7 ± 4 to 3 ± 2, p<0.01), and the improvement was greater in patients with higher SSS and SDS scores at the baseline. Waon therapy extended treadmill exercise time (430 ± 185 to 511 ± 192 sec, p<0.01) and improved FMD (4.1 ± 1.3 to 5.9 ± 1.8%, p<0.05), but tended to decrease the number of circulating CD34-positive cells.

Conclusions: Waon therapy improves CTO-related myocardial ischemia in association with improvement of vascular endothelial function. This therapy could be a complementary and alternative tool in patients with severe coronary lesions not suitable for coronary intervention.

Keywords: Coronary artery disease, Myocardial perfusion, Thermal therapy