artery microcirculation dysfunction is existed and surveying the influencing factor.

Methods We studied the patients with doubtful angina whose coronary arteriography showed the major and branches of coronary artery with less than 50% stenosis. Acetylcholine causes coronary artery spasm was carried out with these patients. These patients who had Angina were in the hospital of cardiovascular Department of Kyushu Medical University in Japan during Jan 2001 to Oct 2003.

Results We studied 574 patients. These patients were divided into three groups according to the changing of lumen diameter of the coronary artery after acetylcholine was injected. 574 patients were accepted acetylcholine by coronary artery injection, 337 patients appeared Coronary artery spasm, the incidence was 58.7%; the age of coronary artery spasm group was higher than the matched group with $p < 0.05$. It was Prompted that the incidence of Coronary artery spasm was increased Followed up age increasing, whether it was Related to Coronary atherosclerosis that was Atherosclerosis Coronary artery was Coronary artery spasm was More likely to occur, it was no reported. 129 patients appeared coronary artery microcirculation dysfunction, the incidence was 22.5%, and the Proportion of Female in this group was higher than the matched group, it was 69.8%, Difference was Significantly than matched group with $p < 0.001$; We had noticed that in the coronary artery microcirculation dysfunction group, the Proportion of smoker was lower than the matched group, Subgroup analysis about all the Subjects, Smoking rates in Male was 72.2%, and 13.6% in female, with $p < 0.001$; the male and female were analysis Respectively in the two group, the Smoking rates was no difference, it was showed that the difference of smoking was caused by the difference of gender. Coronary artery spasm, Coronary artery microcirculation dysfunction were no relationship with Hypertension and Diabetes. In the whole test; Cardiac arrhythmias was occurred with some subjects such as Sinus bradycardia, Atrial contractions, Ventricular contractions, Atrioventricular block, Pacing rhythm Etc., The incidence was 28.2%, but it was no significant difference between three groups. Among the subjects with Cardiac arrhythmias, one was Right coronary artery spasm, following the spasm, the Ventricular fibrillation was occurred immediately, and it was turned to Sinus rhythm by way of defibrillation.

Conclusions In the test of acetylcholine causes coronary artery spasm, the age of coronary artery spasm group was higher than matched group, prompted that the incidence of coronary artery spasm was increasing with aging; Coronary artery microcirculation dysfunction was really existed. The evidence was the increasing of lactate concentration in the coronary sinus vein, this phenomenon was common in women. In this test, whether coronary artery spasm or coronary artery microcirculation dysfunction, it was no relationship with smoking, hypertension and type 2 diabetes.

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ACETYLCHOLINE INJECTION CAUSES CORONARY ARTERY SPASM AND CORONARY ARTERY MICROCIRCULATION DYSFUNCTION—A CLINICAL RESEARCH

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Yingjun Zhao, Na Zhang, Yingjun Zhao. *The People's Hospital of Liaoning Province*

Objectives Observing the patients with angina during the procedure acetylcholine causes coronary artery spasm, whether coronary