

Summary

Characteristics of Myocardial Ischemia in Patients with Chronic Renal Failure and Its Relation to Cardiac Sympathetic Activity

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In order to clarify the characteristics of myocardial ischemia in patients with chronic renal failure (CRF), we performed exercise stress myocardial perfusion imaging with ^{99m}Tc -MIBI in 36 patients with CRF. In 18 patients myocardial imaging with ^{123}I -MIBG (MIBG) and ^{201}Tl was performed at rest to evaluate myocardial sympathetic activities: cardiac uptake of MIBG normalized by myocardial perfusion (Uptake Ratio, UR) and myocardial washout rate of MIBG (WO).

Exercise-induced perfusion abnormality was observed in 25 patients, and coronary angiography was performed in 19 of them. Among 25 diseased coronary arteries, 18 developed perfusion abnormalities in the myocardial segments which were supplied by each coronary artery. However in 5 patients without coronary artery stenosis and 2 patients with left anterior descending coronary artery disease, transient perfusion abnormalities were observed in the inferior segments. In 6 of them, MIBG imaging was obtained (Group A). MIBG imaging was also performed in 5 patients with transient inferior perfusion abnormality

with coronary artery stenosis which supplied the inferior wall (Group B), and 7 patients without perfusion abnormality (Group C). In the patients of Group B, inferior UR was significantly lower than in Group C (0.58 ± 0.07 vs. 0.68 ± 0.08 , $p = 0.0485$) and inferior WO was more accelerated than in Group C (18.6 ± 7.7 vs. $12.1 \pm 6.0\%$, NS). However anterior UR and WO levels were identical with those in Group C. In Group A, inferior UR (0.43 ± 0.05) was significantly lower than in Group B and C, and WO in Group A ($27.2 \pm 8.3\%$) was accelerated significantly compared to that in Group C. Besides in Group A, anterior UR was significantly smaller and WO was greater than in Group B and C.

These findings suggested that in some patients with CRF, myocardial ischemia could arise without coronary artery stenosis, and this phenomenon might be related to abnormalities of cardiac sympathetic activity.

Key words: Chronic renal failure, Myocardial ischemia, ^{123}I -MIBG imaging.