Gated SPECT による多枝病変の検出

Usefulness of Electrocardiogram-gated myocardial perfusion SPECT for a diagnostics of multi vessel coronary artery disease.

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【Introduction】

The diagnosis of multi vessel coronary artery disease is difficult by myocardial perfusion SPECT images only. We searched the specific diagnostic factor of the cardiac function by Electrocardiogram -gated myocardial perfusion SPECT in multi vessel coronary artery disease.

【Patients】

Effort angina pectoris:106
1vessel disease:58
multi vessel disease:48 （ 2 vessel disease :41 3 vessel disease: 7）
age 73±10years （mean ± SD）
male:73 female:33

【Statistical Analysis】

Investigation factor
Rest PER :peak ejection rate and Stress PER (after Adenosine Stress)
Rest PFR :peak filling rate and Stress PFR (after Adenosine Stress)
Rest EF :ejection fraction and Stress EF (after Adenosine Stress)
Rest Bandwidth and Stress Bandwidth (after Adenosine Stress)
We searched for the factor which has a significant involve with a multi vessel disease by Binary Logistic regression analysis
We analyzed significant difference test between 1VD and mVD by Student-t test to the significant factor of cardiac function.
And analyzed true positive rate (TPR) and false positive rate (FPR) by Receiver Operating Characteristic (ROC) .

【Results】

Binary Logistic regression analysis

Explanation variables	Odds Rate (95%confidence interval)	provability
Rest PER	2.23(0.29～16.98)	0.44
Rest PFR	14.84(1.01～217.3)	0.04*
Rest EF	0.88(0.75～1.03)	0.12
Rest Bandwidth	1.01(0.75～1.03)	0.10
Stress PER (after Adenosine Stress)	0.22(0.002～2.20)	0.20
Stress PFR (after Adenosine Stress)	0.12(0.01～1.13)	0.06
Stress EF (after Adenosine Stress)	1.12(0.93～1.34)	0.23
Stress Bandwidth (after Adenosine Stress)	1.03(1.02～1.05)	0.0002**

*P<0.05　***p<0.001

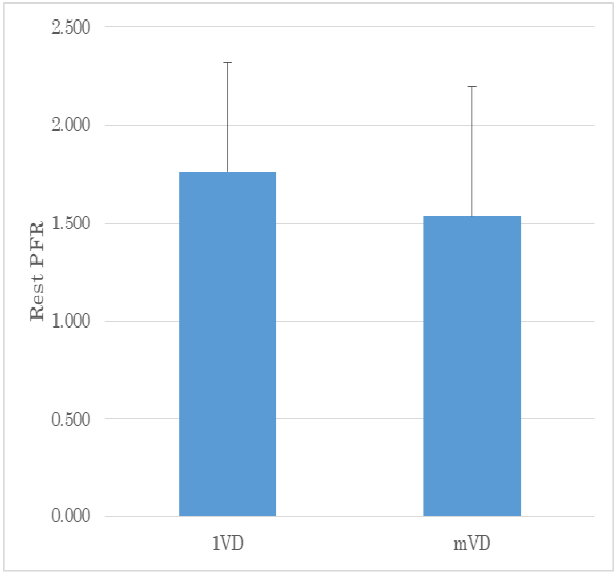

Fig.1 Comparison of Rest PFR between 1VD and mVD. $p<0.05$

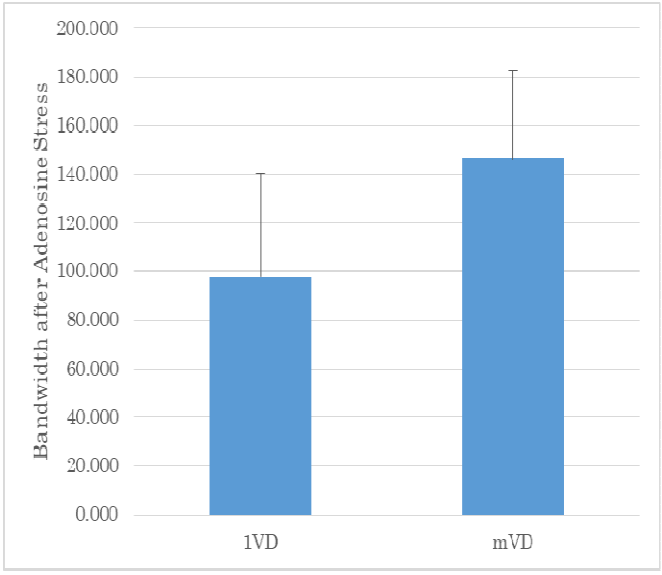

Fig.2 Comparison of Stress Bandwidth between 1VD and mVD. $p=8.8\times10^{-9}$ (<0.001)

In comparison of Rest PFR, mVD declined significantly than 1VD .

In comparison of Bandwidth after Adenosine stress, mVD spread significantly than 1VD.

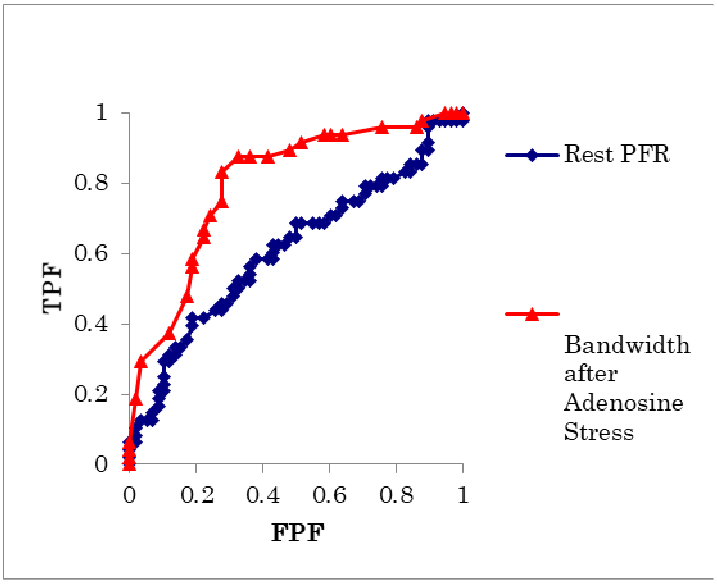

Fig.3 ROC Receiver Operating Characteristic Analysis.

Rest PFR Cutoff=1.6 TPF=0.583 FPF=0.379 Odds Ratio=2.291

Stress Bandwidth Cutoff=120 TPF=0.833 FPF=0.276 Odds Ratio =13.125

【Discussion】

In case of mVD, decrease of Rest PFR means diastolic dysfunction. This phenomenon is the state of being easy to receive myocardial dysfunction by stress. It is considered to have induced broadening of the Bandwidth by adenosine stress. Spread of Bandwidth means dyssynchrony by adenosine. It is considered to be in a transient stunning state by adenosine stress.

【Conclusion】

Bandwidth of after adenosine stress by Electrocardiogram -gated myocardial perfusion SPECT can become a factor for diagnosis of multi vessel coronary artery disease.