Fractional flow reserve and instantaneous wave-free ratio discordance in patients with severe aortic valve stenosis

F. Yamanaka[1], K. Shishido[1], S. Yokota[1], N. Moriyama[1], Y. Mashimo[1], T. Hayashi[1], H. Miyashita[1], H. Yokoyama[1], K. Tobita[1], S. Mizuno[1], Y. Tanaka[1], M. Murakami[1], S. Takahashi[1], K. Tsujita[2], S. Saito[1]

[1]Shonan Kamakura General Hospital, Kamakura, Japan; [2]Kumamoto University Hospital, Department of Cardiovascular Medicine, Kumamoto, Japan

Funding Acknowledgement: Type of funding source: None

Background: It has been reported that discordance between fractional flow reserve (FFR) and Instantaneous Wave-Free Ratio (iFR) could occur in up to 20% of cases. However, there are no reports regarding discordance between FFR and iFR in patients with severe aortic valve stenosis (AS).

Purpose: We aimed to investigate the discordance between FFR and iFR in patients with severe AS.

Methods: Severe AS was defined as an aortic-valve area of $\leq$1.0 cm^2, a mean aortic-valve gradient of 40mmHg or more, or a peak aortic-jet velocity of 4.0 m/s or more. Intermediate coronary artery stenosis was defined as 30% to 70% stenosis (visual estimation). FFR and iFR were calculated in 4 quadrants based on values of FFR $\leq$0.8 and iFR $\leq$0.89 (positive discordance; low FFR and high iFR, negative discordance; high FFR and low iFR).

Results: We examined consecutive 140 patients (164 intermediate coronary artery stenosis vessels). Mean FFR and iFR ± standard deviation was 0.82±0.09 and 0.82±0.14, respectively. The discordance was observed in 48 vessels (29.3%). In the discordant group, most of cases were negative discordance (45 cases, 93.6%). Binary logistic regression analysis showed that left anterior descending artery (Hazard Ratio 3.80; 1.55 to 9.31, p=0.0036) was independently associated with negative discordance.

Conclusions: In patients with severe AS, the discordance between FFR and iFR could be observed in 29.3% of the vessels, mostly negative discordance. The left anterior descending artery is an independent predictor for negative discordance.