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THE PERFORMANCE OF 3D SPECT/CT IMAGE FUSION IN PATIENTS WITH MULTIVESSEL CORONARY DISEASE USING THE FRACTIONAL FLOW RESERVE

Poster Contributions
Poster Sessions, Expo North
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Background: Three-dimensional single photon emission computed tomography (SPECT) / computed tomography (CT) image fusion (Fusion) improves diagnostic accuracy for detecting ischemic related territories. However, the performance of Fusion in multi-vessel coronary disease (MVD) is still uncertain. The aim of this study was to investigate the performance of Fusion using the fractional flow reserve (FFR) in patients with MVD.

Methods: Consecutive forty-five patients with more than 2 significant diseased vessel (%DS>70%) confirmed by CT angiography (CTA) were enrolled. The enrolled patients were prospectively scheduled to undergo Fusion and check FFR in all vessels. FFR value <= 0.80 was defined as positive.

Results: Total of 45 patients with 182 vessels were examined. 33.3% and 80.0% of enrolled patients were diagnosed as having more than 2-vessel disease on Fusion and on FFR, respectively (Figure A). On vessel analysis, based on FFR value, 43.4% of the lesions had been diagnosed as pseudo-negative on Fusion. On patient analysis having at least 1- or more pseudo-negative lesion, the mean FFR was significantly lower in the vessels with both positive FFR and positive Fusion than in the vessels with both positive FFR and negative Fusion (0.53±0.11 vs. 0.68±0.08,p=0.0002) (Figure B).

Conclusions: Fusion tends to underestimate the functional importance in comparison to FFR in patients with MVD. However, this study suggested that Fusion could detect the most severe ischemic vessel in the patients with MVD.