A NOVEL RADIOFREQUENCY SIGNAL ANALYSIS FOR CORONARY PLAQUE CHARACTERIZATION AT CULPRIT LESION USING IMAPTM: HOW CAN WE USE THE NEW PARAMETER: CONFIDENCE LEVEL?

i2 Poster Contributions
Ernest N. Morial Convention Center, Hall F
Monday, April 04, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Intravascular Diagnostics II
Abstract Category: 3. Intravascular Diagnostics
Session-Poster Board Number: 2509-575

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Background: IMAPTM is a novel intravascular ultrasound (IVUS) based technology to classify coronary plaque into 4 components. We compared plaque characteristics in patients with and without acute coronary syndrome (ACS vs. non-ACS) using newly developed IMAPTM system.

Methods: A total of 93 culprit lesions from 83 patients were analyzed using IMAPTM (ACS lesions: n=34 vs. non-ACS lesions: n=59). Each plaque was classified into 4 components; Fibrotic, Lipidic, Necrotic, and Calcified with newly introduced parameter of confidence level representing the reliability of these classifications according to the priory stored autopsy data.

Results: By IMAPTM analysis of minimal lumen area (MLA), ACS lesions showed significantly larger Lipidic and Necrotic area than non-ACS lesions (1.16±0.63mm² vs. 0.67±0.40mm², p<0.001, 5.56±3.37mm² vs. 3.16±2.35mm², p<0.001, respectively). Multivariate analysis revealed that Lipidic area at MLA was independently associated with ACS lesions (odds ratio 4.13, p<0.001). To identify the best predictive value of confidence levels for ACS lesions, we performed ROC analysis with 4 different ranges of confidence levels (0-100%, 25-100%, 50-100%, and 75-100%). As a result, Lipidic area at MLA with 25-100% confidence level showed largest AUC (0.756).

Conclusions: IMAPTM could clarify the different plaque characteristics between ACS and non-ACS lesions. Lipidic area at MLA with 25-100% confidence level may be the best option to discriminate between ACS and non-ACS.