IN VIVO COMPARISON OF MORPHOLOGICAL CHARACTERISTICS OF CULPRIT LESIONS BETWEEN PATIENTS WITH ST ELEVATION MYOCARDIAL INFARCTION AND NON ST ELEVATION ACUTE CORONARY SYNDROME. AN OPTICAL COHERENCE TOMOGRAPHY STUDY.

i2 Poster Contributions
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Background: Plaque rupture is mainly implicated in the pathogenesis of acute coronary syndrome (ACS). There are no in vivo studies regarding the relationship between the clinical type of ACS and morphology of plaque. Optical coherence tomography has enabled the discrimination between microstructures of vulnerable plaque in vivo. We hypothesized that there are distinct differences in the morphology of ruptured plaques between patients with non-ST elevation ACS (NSTACS) and patients with ST elevation myocardial infarction (STEMI).

Methods: We studied 33 patients with ACS with ruptured culprit lesion (CL). Patients were divided in 2 groups according to the clinical presentation of ACS; patients with NSTACS and STEMI. Plaque rupture was defined as presence of fibrous cap discontinuity. CL was identified by a combination of ECG, transthoracic echocardiogram and coronary angiography. Thereafter, optical coherence tomography image acquisition was performed in CL, before any balloon dilatation or stent deployment.

Results: Thirteen patients with NSTACS and 20 patients with STEMI were studied. In patients with NSTACS, mean length of plaque disruption was 1.31±0.48mm, while in patients with STEMI mean length was 2.47±2.32mm (p<0.05). Mean fibrous cap thickness was similar between the two groups (47±27 vs. 47±16μm, p=0.99). Although cross-sectional area (CSA) of minimal lumen site was greater in patients with NSTACS vs STEMI (2.57±2.27mm2 vs. 1.27±0.76 mm2, p=0.03), no significant differences were found regarding CSA of the rupture site (4.15±3mm2 vs. 3.9±2.59mm2, p=0.83). No significant differences were found regarding the distance of rupture from the site of minimal lumen area (2.17±3.94 mm vs. 0.78±3.00 mm, p=0.37), the length of missing fibrous cap (0.5±0.3mm vs. 0.62±0.48, p=0.58) and the incidence of plaques broken at cap shoulder (61.53% vs. 68.42%, p=0.72).

Conclusions: Patients with STEMI have CLs with greater length of rupture compared to patients with NSTACS. The identification of the morphological differences in vivo between clinical types of ACS could give investigators a key for better understanding of the pathophysiological mechanisms responsible for the clinical onset of ACS.