Abstract: P754

Angiographic and clinical correlates of type 2 myocardial infarction

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Background: Type 2 (T2) myocardial infarction (MI) is increasingly diagnosed in patients presenting with acute coronary syndrome. It may be difficult to accurately diagnose this entity based only on clinical evidence of imbalance between oxygen supply and demand without angiographic data.

Objective: to assess the incidence of angiographically diagnosed T2 vs. type 1 (T1) MI and their respective clinical features.

Methods: We retrospectively included 450 consecutive patients with acute MI, diagnosed according to the Third Universal Definition (2012). All patients underwent coronary angiography. T1 MI was diagnosed in the presence of atherothrombosis. All patients without signs of atherosclerotic plaque disruption were classified as having T2MI. Student’s t-test and chi-square methods were used to compare single variables in patients with T1 and T2 MI. Multiple logistic regression was then performed to establish independent association of studied parameters with the type of MI.

Results: Type 2 MI was diagnosed in 175 (39%) patients, among which 114 (65%) demonstrated clinical evidence of oxygen supply/demand imbalance. The most common MI triggers were anemia [67 (38.3%)], atrial fibrillation [24 (13.7%)], and severe hypertension [21 (12.2%)]. A substantial proportion [130 (47.3%)] of patients with T1 MI also had identifiable conditions that could lead to myocardial ischemia. T2MI was associated with older age (66.9 ±12.4 vs 63.7±11.9 years, p=0.007), female gender [78 (44.6%) vs 90 (32.7%), p=0.01], absence of ST segment elevation [43 (24.6%) vs 198 (72.0%), p=0.001] and lower troponin values (2.02±1.79 vs 6.15±5.18 ng/mL, p=0.001). T2MI patients also had more often had a previous MI [82 (46.9%) vs 52 (18.9%), p<0.001], and undergone myocardial revascularisation [34 (19.4%) vs 25 (9.0%), p=0.002]. Left ventricular ejection fraction was similar in both MI types (44.3±10.6% in T2 MI vs 42.3±9.4% in T1 MI, p=0.071). MI with non-obstructive coronary arteries (MINOCA) was diagnosed in a significant fraction of T2 MI patients [26 (14.9%)]. Independent clinical associations of T2 MI were the presence of anemia [67 (38.3%) vs 68 (24.7%); odds ratio (OR) 1.8; 95% confidence interval [CI] 1.0-3.1, p<0.001], left bundle branch block (OR 3.1; 95% CI 1.2–7.8, p=0.019), age = 70 years (OR 1.9; 95% CI 1.1-3.2, p=0.014), absence of local wall motion abnormalities on echocardiography (OR 2.0; 95% CI 1.2-3.4, p=0.002) and ST-segment elevation on electrocardiography (OR 6.5; 95% CI 3.9-10.8, p=0.002).

Conclusion: Angiographic signs of type 2 MI do not always match the clinical evidence of imbalance between myocardial oxygen supply and demand. Type 2 myocardial infarction is independently associated with concomitant anemia, left bundle branch block, older age, and the absence of left ventricle wall motion abnormalities and ST-segment elevation.