

TCT-8

Electrocardiographic Left Ventricular Hypertrophy as a Predictor for In-hospital Heart Failure in Patients with Non-ST Elevation Myocardial InfarctionNaoki Misumida¹, Akihiro Kobayashi¹, Yumiko Kanei¹¹Mount Sinai Beth Israel Medical Center, New York, NY

Background: Left ventricular hypertrophy (LVH) is well known to be a potent predictor of heart failure in a general population. We aimed to determine the predictive value of electrocardiographic LVH for in-hospital heart failure in patients with non-ST elevation myocardial infarction (NSTEMI).

Methods: We retrospectively reviewed 347 consecutive NSTEMI patients who underwent coronary angiography within five days after presentation from January 2013 to December 2013. The diagnosis of NSTEMI was made using the third universal definition of myocardial infarction. Among 347 patients, 39 patients were excluded; 25 patients had right bundle branch block, seven had old left bundle branch block, and seven had no chest pain with strain-pattern ST changes. LVH was diagnosed by using Sokolow-Lyon and Cornell criteria. Clinical characteristics alongside electrocardiographic and angiographic findings were compared between the patients with and without LVH. Non-obstructive coronary artery was defined as less than 50% stenosis. Rate of revascularization and in-hospital major adverse cardiac event (MACE) including death, recurrent myocardial infarction, target vessel revascularization, lethal ventricular arrhythmia and heart failure defined by Killip class ≥ 2 , were recorded.

Results: Among 308 patients, 24 patients (7.8%) met the Sokolow-Lyon criteria and 69 patients (22.4%) met Cornell criteria. Seventy-six patients who met either of Sokolow-Lyon or Cornell criteria were included in the LVH group. The LVH group had a higher rate of non-obstructive coronary artery as compared to the non-LVH group (30.3% vs. 18.5%, $p=0.03$). Consequently, the LVH group had a lower rate of in-hospital revascularization (39.5% vs. 66.4%, $p<0.001$). Patients with LVH had a higher rate of in-hospital MACE (21.1% vs. 10.8%, $p=0.02$), driven by two-fold increase of heart failure (19.7% vs. 9.1%, $p=0.01$). The positive association between LVH and in-hospital MACE persisted after adjusting for age and prior myocardial infarction (odds ratio 2.16; 95% confidence interval, 1.06 to 4.31; $p=0.03$).

Conclusions: Electrocardiographic LVH was a strong predictor for in-hospital heart failure in patients with NSTEMI.

Acute Myocardial Infarction

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TCT-9

Spontaneous Coronary Artery Dissection: Association with Predisposing Arteriopathies and Precipitating Stressors, and Cardiovascular OutcomesJacqueline Saw¹, Eve Aymong², Tara Sedlak³, Andrew Starovoytov⁴, Donald Ricci³, Simon Robinson⁵, Johannes Vuurmans⁶, Min Gao⁷, Karin Humphries⁸, G. B. John Mancini⁹

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Background: Non-atherosclerotic spontaneous coronary artery dissection (NA-SCAD) is under-diagnosed and an important cause of myocardial infarction (MI) in young women. The frequency of predisposing and precipitating conditions, and cardiovascular outcomes remain poorly described.

Methods: Patients with NA-SCAD prospectively evaluated (retrospectively or prospectively identified) at Vancouver General Hospital were included. Angiographic SCAD diagnosis was confirmed by 2 experienced interventional cardiologists and categorized as type 1 (multiple lumen), 2 (diffuse stenosis) or 3 (mimic atherosclerosis). FMD screening of renal, iliac and cerebrovascular arteries were performed with angiography or CTA/MRA. Baseline, predisposing and precipitating conditions, angiographic, revascularization, in-hospital and long-term events were recorded.

Results: We prospectively evaluated 168 NA-SCAD patients. Average age was 52.1 ± 9.2 yrs, 92.3% were women (62.3% postmenopausal). All presented with MI. ECG showed ST-elevation in 26.1%, and 3.6% suffered VT/VF arrest. FMD was diagnosed in 69.0%. Precipitating emotional or physical stress was reported in 56.5%. Majority had type 2 angiographic SCAD (67.0%); only 29.1% had type 1 and 3.9% had type 3. The majority (134/168) were initially treated conservatively. Overall, 6/168 had CABG and 33/168 had PCI in-hospital. Of those treated conservatively ($n=134$), 3 required revascularization for SCAD extension, and all 77 who had repeat

angiogram ≥ 26 days later had spontaneous healing. Two-year major adverse cardiac events were 16.9% (retrospectively-identified group) and 10.4% (prospectively-identified group). Recurrent SCAD occurred in 13.1%.

Conclusions: Majority of NA-SCAD patients had FMD and type 2 angiographic SCAD. Conservative therapy was associated with spontaneous healing. NA-SCAD survivors are at risk for recurrent cardiovascular events including recurrent SCAD. Long-term prospective follow-up of NA-SCAD patients are important to evaluate cardiovascular outcomes, and correlation to predisposing arteriopathies and revascularization strategies.

TCT-10

Cardiac rehabilitation for patients with spontaneous coronary artery dissectionAnnie Y. Chou¹, Jennifer Rajala², Taira Birnie¹, Carolyn Taylor³, Andrew Ignaszewski³, Karin Humphries⁴, G. B. John Mancini⁵, Tara Sedlak¹, Jacqueline Saw⁶

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Background: Spontaneous coronary artery dissection (SCAD) is an important cause of myocardial infarction (MI) in young women. SCAD survivors are at risk of recurrent SCAD due to underlying predisposing conditions such as fibromuscular dysplasia (FMD). Moreover, ~50% report precipitating stressors (emotional or physical) preceding the MI. Thus, standard cardiac rehabilitation (CR) program may not be suited for this cohort.

Methods: We designed a SCAD-specific CR protocol at Vancouver General Hospital for post-MI SCAD patients. This SCAD-CR is scheduled weekly with targeted participation of 6 months. Exercise component is altered to reduce arterial shear stress. At the start, target exercise heart rate is aimed at 50-70% of the heart rate reserve based on the entrance exercise treadmill test (ETT). Resistance training focuses on increasing muscle strength using more repetitions with lighter weights rather than increasing weight lifted. Patients are advised to avoid lifting >20 pounds. Exercise systolic blood pressure threshold is <130 mmHg. Psychosocial counseling is an important component of SCAD-CR; counseling and mindful living sessions are offered in addition to peer-support from other SCAD patients. Other components are chest pain and secondary cardiac risk factor management. Baseline demographic, entrance and exit ETT, and questionnaires (for anxiety, depression and stress), and hospital or doctor visits for chest pain during the program were recorded.

Results: We report our cohort of 56 consecutive women with SCAD participating in our SCAD-CR from November 2011 to May 2014. The average age was 52.7 ± 9.7 yrs, and 84% have FMD. About half had recurrent chest pains upon program entry. Twenty-one patients completed 6-month duration, and 14 are currently participating. The remainder 21 participated for <6 months due to other commitments. Of patients who completed 6-months, there was an improvement in exercise duration and none had visits to the emergency or repeat hospitalization for chest pain during the program.

Conclusions: This is the first SCAD-specific CR program addressing the unique exercise and psychosocial needs of this patient cohort. Our full protocol and results will be presented.

TCT-11

Angiographic Appearance of Spontaneous Coronary Artery Dissection with Intramural Hematoma Proven on Intracoronary ImagingJacqueline Saw¹, G. B. John Mancini², Karin Humphries³, Anthony Fung⁴, Andrew Starovoytov⁵, Eve Aymong⁶

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Background: Coronary angiography is the traditional gold-standard for spontaneous coronary artery dissection (SCAD) diagnosis, however, this technology is imperfect as it does not image the arterial wall. Angiographers typically seek the appearance of stereotypical multiple radiolucent lumen to diagnose SCAD, which unfortunately is absent in ~70% of dissected arteries. We aim to describe the angiographic variants of SCAD confirmed with intracoronary imaging.

Methods: We report the angiographic appearance of SCAD that were proven on intracoronary imaging with optical coherence tomography (OCT) or intravascular ultrasound (IVUS). Our angiographic classification and algorithm for SCAD diagnosis was previously reported. Patients with type 1 angiographic SCAD (multiple radiolucent lumen) do not require OCT/IVUS, whereas, it was recommended for those with suspected type 2 (diffuse stenosis) or 3 (mimic atherosclerosis) SCAD. Clinical features that raise the index of suspicion for SCAD include MI in young women, absence of cardiovascular risk factors, peripartum state, presence of fibromuscular dysplasia or relevant connective tissue or systemic inflammatory disorders, and intense exercise or emotional stressors.

Results: Intracoronary imaging was performed in 19 patients with non-type 1 angiographic SCAD involving 22 coronary arteries (19 OCT, and 3 IVUS). Mean age was 52.9 ± 9.9 yrs, and 89.5% were women. Of the 22 OCT/IVUS-proven SCAD