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# Abstracts: Case Reports



## Cardiovascular Disease Risk Estimation Systems In Primary Prevention: Can We See The Future?

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**Introduction:** Atherosclerotic cardiovascular disease (ASCVD) remains the leading cause of morbidity, mortality, and cost to health care system worldwide. Estimated of total cardiovascular (CV) risk is part of prevention that determine the absolute risk of experiencing ASCVD, thus guiding the action for prevention. Many risk estimation systems are in existence. Different guidelines recommend different risk score calculators to assess the 10-year developing cardiovascular disease (CVD) risk.

**Case Illustration:** Three cases of patient without ASCVD with CV risk factors were calculated for their CV risk score using Systemic Coronary Risk Estimation (SCORE) system, Jakarta Cardiovascular Score (JAKVAS), and World Heart Organization (WHO) risk estimation charts. First case, 43 year-old-male with obesity, hypertension, dyslipidemia, and family history of CHD had low-risk of CVD based on SCORE and JAKVAS, and <5% risk of CVD based WHO chart. Second patient, 58 year-old-male with dyslipidemia, hypertension, and active smoker had very high-risk of CVD based on SCORE, high-risk of CVD based on JAKVAS, and 5-10% risk of CVD based on WHO chart. Third patient, 48 year-old-male, had obesity, dyslipidemia, and hypertension, considered as low-moderate risk based on SCORE, moderate risk by JAKVAS, and < 5% of risk based on WHO chart. Management of all three patient discussed based on each guideline supporting the risk prediction model.

**Conclusions:** Three cases of patient with cardiovascular risks has been presented. JAKVAS represent more to our population characteristic so the result must be very close to the reality. Reclassification using imaging methods may be considered as risk modifiers in CV risk assessment.

**Keywords:** ASCVD, Prevention, SCORE, JAKVAS, WHO Risk Chart



## Role of External Counterpulsation in Acute Heart Failure Patient

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**Background :** Acute Heart Failure (AHF) is broadly defined as a rapid onset of new or worsening signs and symptoms of Heart Failure. It is often a potentially life-threatening condition, requiring hospitalisation, and emergency treatment. The presence of new onset Left Bundle Branch Block (LBBB) in AHF patients can increase poor cardiovascular outcome and mortality. In this case, External Counterpulsation (ECP) has emerged as a promising non-invasive modality of treatment for patient with AHF. This study aimed to describe the effect of ECP therapy in patient with AHF.

**Case Description :** A 46-year-old female patient came with shortness of breath during activity since 2 months ago and worsened in the last 1 week. She had a history of hypertension, familial history of coronary artery disease. Physical examination showed signs of left and right sided heart failure. LBBB was noted from the Electrocardiogram (ECG), chest x-ray showed cardiomegaly, and echocardiogram showed Left Ventricular Ejection Fraction (LVEF) of 19%. After ECP therapy sessions in combination with medical drug therapy, she was improved. Her functional class and quality of life were improved. She could easily return to her work in the middle of the ECP therapy. LBBB in the ECG was also altered to sinus rhythm.

**Conclusion :** In this case, ECP has shown promising treatment of acute heart failure which gives some beneficial effects on cardiovascular system.

**Keywords:** External Counterpulsation, Acute Heart Failure, Left Bundle Branch Block



## A Case Report of Positive Ischemic Response on Treadmill Stress Test in Patient with Left Ventricular Strain ECG Pattern

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**Background:** As with all medical testing, the treadmill stress ECG test is not without inaccuracy for the detection of coronary artery disease (CAD). Many hypertensive patients will have resting ECG abnormalities in the presence of left ventricular hypertrophy (LVH) gives an increase in false positive results. In the presence of LVH and basal ST-T changes (LV strain pattern), hypertensive patients may develop ST-segment depression at exercise without significant obstructive CAD.

**Case Illustration:** Reported in this case is a 40 year old male patient complained of stable angina during hospitalization due to suspected upper tract urothelial carcinoma with family history premature CAD, previous history of hospitalization due to angina, hypertension, and a positive ECG stress test with Duke Treadmill Score -4,5. The test was conducted using the Bruce method and was stopped at 05.26 minutes stage II because the systolic blood pressure reached 240 mmHg. ECG results at rest are sinus rhythm 75 x/m with left ventricular hypertrophy and left ventricular strain in the form of 1 mm downsloped ST depression in V5-V6 with T wave inversion. There was a change in the ECG 2 mm horizontal type ST segment depression in leads V4-V6 at peak exercise. The patient underwent a coronary angiogram examination with normal coronary results. Treadmill stress test has a lower diagnostic value than the diagnostic imaging test in patients with left ventricular hypertrophy. There is evidence that suggests the positive exercise test may not be a false positive in patients with LVH and normal coronary angiography, but in fact reflects a true deficit in coronary flow reserve referred as microvascular angina.

**Conclusion:** Treadmill stress ECG test should be avoided as they are insufficiently sensitive or specific for the detection of significant obstructive CAD in patient with left ventricular hypertrophy.

**Keywords:** Treadmill Stress Ecg, Left Ventricular Hypertrophy, Left Ventricular Strain



## Diagnostic and Prognostic Role of Treadmill Stress Test in Patient with High Risk Ventricular Tachycardia: Report of Two Cases

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**Background:** Ventricular tachycardias (VT) are usually related to structural heart disease. However, some patients have no structural heart disease nor metabolic and electrolyte disturbance. Only few reports documented the use of treadmill stress test in high risk VT patients. This study reports the use of treadmill stress test to reveal controlled levels of exercise can be maintained in patients with high risk VT.

**Case Description:** These cases involved 2 patients with palpitation and no history of syncope. Their echocardiography was structurally normal meanwhile Holter report showed NSVT. Treadmill test with Bruce protocol were performed. In first patient, NSVT episode had been existed during peak exercise followed by documented PVC pattern from resting, exercise stage I to peak exercise. In second patient, NSVT with the reentry mechanism had been revealed during recovery period. Both of these VT converted spontaneously.

**Discussion:** From 2 cases of patient with those underlying diagnosis, VT had been happened in both with morphology monomorphic LBBB-shaped. Exercise stress testing is frequently uses to evaluate RVOT VT by its clinical presentation which is in this case was repetitive monomorphic tachycardias and exercise-induced with re-entrant arrhythmias as underlying mechanism. Thus, it can be suspected an idiopathic VT and needs periodic cardiac follow-up to rule out latent progressive heart disease. Clinical variables from echocardiography and Holter were needed to be evaluated before or during exercise for safety reason.

**Conclusion:** Treadmill test can be performed in high risk of VT patients. Understanding the arrhythmia typical presentation is important to optimize the management.

**Keyword:** Treadmill Stress Test, Heart Diseases, Ventricular Tachycardia<sup>[1]</sup>



## Treadmill Test for Risk Stratification in Patient with Wolff-Parkinson-White Pattern

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**Background :** Treadmill test (TMT) is also indicated in patients with pre-excitation syndrome (Wolff-Parkinson-White (WPW)) to evaluate the risk of sudden cardiac death (SCD) event. This case report is to show the important of interpretation of TMT in patients with WPW pattern.

**Case Description :** We present 23-year-old male with asymptomatic WPW pattern with no risk factor of coronary artery disease. The ECG showed sinus rhythm 60 x/m and delta wave with shortened PR interval. Echocardiography showed all within normal parameter. Holter monitoring showed no atrial fibrillation. The patient underwent TMT with Bruce protocol for 37 seconds, stopped due to limiting chest pain. Maximum heart rate during exercise was 155 x/m (78% maximum heart rate for age and the patient is not taking beta-blockers) and delta wave was persistent. There was no chronotropic incompetence or arrhythmias (no atrial fibrillation was found). There was 3 mm ST segment horizontal depression at peak exercise. Treadmill test is one of the tools to assess risk stratification of asymptomatic WPW patient. High risk of SCD in this patient is noted because there was persistent delta wave at peak exercise heart rate. The ST segment depression could be assessed as positive ischemic response in WPW but it might be false positive. In patient with high risk for atherosclerosis, coronary angiography might be considered. The patient then planned for electrophysiology study to evaluate the need of ablation.

**Conclusions :** Treadmill test could be a prognostic tools for asymptomatic WPW patients.

**Keyword:** Treadmill Test, Wolff-Parkinson-White Pattern, Risk Stratification



## Exercise-Induced Ventricular Tachycardia during Exercise Stress Test

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**Background:** Exercise-induced ventricular tachycardia during stress test has generally been thought to occur because of severe ischemic heart disease. Patients may experience ventricular tachycardia in the presence of severe coronary artery disease (CAD) during exercise stress test. It is important to anticipate the occurrence life threatening ventricular tachycardia by informing the patient and family and also preparing resuscitation kits in the treadmill room.

**Case Illustration:** A 63 year old male patient came to our practice for treadmill stress test. The patient had history of myocardial infarction 2 weeks ago and remained asymptomatic. Cardiovascular risk factors were diabetes mellitus, smoking and obesity. Treadmill test was performed with mode of Bruce. Resting electrocardiogram showed Q pathologies in V1-V3 and single premature ventricular contraction. Test was stop at stage 2 because of fatigue without any experience of angina. During recovery patient experienced cardiac arrest then cardio-pulmonary resuscitation and 200 joule shock was performed followed by return of spontaneous circulation. Patient then was sent to catheterization laboratory and angiography revealed three-vessels disease with chronic total occlusion in LAD and RCA. Treadmill stress test is generally safe procedure as diagnostic test for CAD. Yet, in the presence of severe coronary artery disease, it can provoke life threatening ventricular arrhythmia during the test. Little is known of predictor life threatening ventricular tachycardia before the test performed. This highlights the importance of informing and preparing the catastrophic event before the test.

**Conclusion:** Risk of treadmill stress test should be well informed to the patient and family and also always prepared with resuscitation kits.

**Keywords:** Treadmill Stress Test, Cardiac Arrest, Ventricular Tachycardia



## Low Pretest Probability of Coronary Artery Disease in Young Woman with Significant Coronary Artery Lesion. A Case Report

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**Background:** Pretest probability (PTP) assessment for CAD is sometimes inconclusive and not always applicable for all population. Careful approach is mandatory. This report aims to present inconsistency of PTP for suspected CAD in young woman.

**Case Description:** A 39 year old woman came with chest pain since 1 month. It feels like punctured by needle, last for < 5 minutes, located at the back, worsened by strenuous activity, and relieved by rest. She felt fatigue easily. She denied any cardiac risk factor. Her mom had heart failure at her 4<sup>th</sup> decade. Physical examination and echocardiography were normal. Resting ECG showed ventricular extrasystole and ST depression on inferolateral wall. Laboratory results were triglyceride 200 mg/dl, cholesterol 215 mg/dl, HDL 44 mg/dl, and LDL 131 mg/dl. Pretest probability (ESC 2019<sup>1</sup>, Genders model<sup>2</sup>, and Duke Clinical score<sup>3</sup>) were 3%, 10%, and 5% respectively. Based on clinical findings and due to lack of imaging facility, Treadmill test (TMT) was commenced. Ischemic response were noted with Duke Treadmill Score -6.16 (intermediate event risk) and she underwent angiography. She had 80-90% of coronary artery lesion from mid-distal left anterior descendens. Revascularization was done and she recovered uneventfully. In our patient, PTP (consisting of age, gender, and angina) is inconclusive because genetics and dyslipidemia is the main finding (modifier). CAD may presents atypically in woman<sup>4</sup>. Non-invasive workup using Coronary CT angiography is recommended, particularly in patient with low clinical likelihood of CAD.

**Conclusion:** Careful and tailored approach is cornerstone for diagnosing CAD, even in patient with low PTP.

**Keywords:** Pretest Probability, CAD, Treadmill Test



## External Counterpulsation (ECP) As A Non-Invasive Treatment Gives Significant Improvement For A Heart Failure Patient : A Case Report

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**Background:** Heart failure is a clinical condition that caused by functional or structural impairment of blood ejection or ventricular filling. Some cases show sign and symptoms of volume overload. A patient's quality of life may decrease when it should not be happened if it primarily or secondarily prevented. This report aimed to describe the advantage of ECP for a heart failure with refractory angina patient.

**Case Illustration:** A 43 years old female patient came on a wheelchair, underwent PCI in 2018 with 2 stents in LAD and LCx, had dyspnea on effort for 8 months, orthopnea, paroxysmal nocturnal dyspnea, persistent chest pain. She was in congestive conditions, according to echocardiographic results, she had 28% capacity of ejection fraction, moderate mitral regurgitation. Her NTproBNP result was 31,217 pg/mL. She only got 60m in 6 Minutes Walking Test and was diagnosed with heart failure NYHA Class III, CCS Class III. After went through a period of 35 times ECP treatment, 1hour/day/session, with average pressure 1.3 psi, she could walk 2 kilometers easily, had impressive improvement in increasing ejection fraction to 47%, the mitral regurgitation, NTproBNP level and 6MWT. The mechanism of ECP presumably induces the growth of new collateral vessels, improves perfusion to ischemic myocardium and endothelial function. By deflate the cuffs continuously, ECP decreases intracoronary systolic and LV after load so it can reduce the work load, and escalate functional capacity.

**Conclusion:** External counterpulsation has been significantly improved LV function, alleviated dyspnea and chest pain, which lead to a better quality of life.

**Keywords :** ECP, Extra Counterpulsation, Heart Failure, Chest Pain, Angina



## Exercise Training In Pediatric Post Fontan Patient: A Solution For Exercise Intolerance

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**Introduction :** Over 50 years, Fontan procedure has been performed for congenital heart defects. Thousands of operations is performed annually. Despite its benefit, Fontan circulation has various complications one of which is exercise intolerance. Cardiac Rehabilitation (CR), particularly exercise training is predicted to increase exercise capacity.

**Case Illustration:** A 17 years old patient with tricuspid atresia, Ventricular Septal Defect (VSD), Atrial Septal Defect (ASD), and Pulmonary Stenosis (PS) underwent Bi-directional Cavo-pulmonary shunt (BCPS), septectomy, PDA ligation, and Main Pulmonary Artery (MPA) ligation in 2017. Three years later, her Pulmonary Artery Resistance Index (PARi) was 1.22 U/m<sup>2</sup>. Extra cardiac Fontan procedure was performed in March 2021, and she has been registered for cardiac rehabilitation program since then. She went through a 3 days/week exercise training course for 4 weeks, where she performed a combination of aerobic and resistance exercises. At the end of the cardiac rehabilitation program evaluation of the exercise capacity was conducted by a submaximal exercise stress test, 6 minutes walking test. There were an increased of exercise capacity or functional capacity. A quality of life assessment, HADS, showed no anxiety and depression recorded by the end of the program.

**Conclusion:** Pediatric post Fontan patients who commonly experience exercise intolerance may benefit from Cardiac Rehabilitation (CR), particularly exercise training.

**Keywords :** Fontan Procedure, Cardiac Rehabilitation, Functioal Capacity, Quality of Life

## A 28 Years Old Man with Autolysis Anterolateral STEMI : Coronary Heart Disease in Young Age

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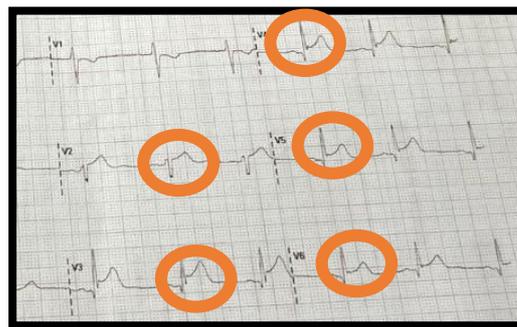
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**Background :** Coronary Heart Disease (CHD) is the leading cause of mortality worldwide. Smoking, hypertension, low HDL and high triglycerides are the major risk factors. CHD are uncommon in young age, the prevalence was just 6,3%.

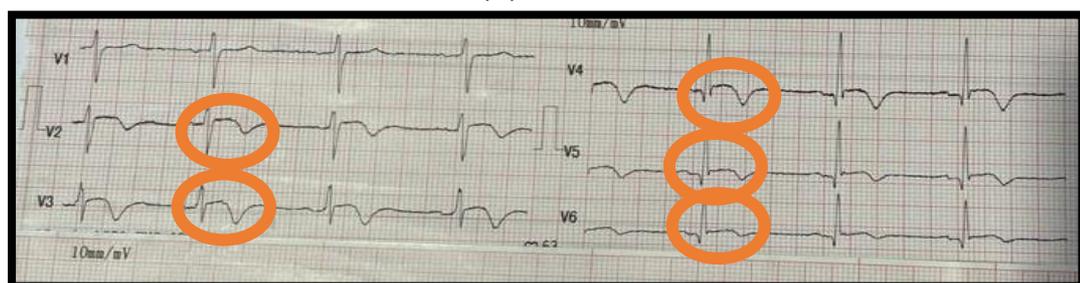
**Case Description :** A 28 years old man came to the ER with complaints of chest pain since 19 hours ago. Chest pain was felt continuously and spreads to the left back, the chest feels burn and tight. The patient has been smoking since the age of 15. No abnormalities found in the physical examination except the chest pain. ECG Examination showed ST Segment elevation of lead V2-V6, serial ECG showed the change of pattern in to T Inverted of lead V2-V6. There was an increase in Troponin-T enzyme 350 ng/L, low HDL 44 mg/dL, and high LDL 153 mg/dL. Echocardiogram showed 50% of Left ventricle ejection fraction without cardiomegaly and valves abnormalities. We found smoking and dislipidemia as the risk factors. Primary PCI and Anticoagulant was performed to treat this patient. 30-40% Stenosis of LAD vessel was found with autolysis in early coronary angiography, other vessels were normal. The patient's condition improved and discharged within 4 days

**Conclusion :** Identifying the risk factors in young age CHD patient is important for clinician to reduce the chance of future heart attack. Smoking remains one of the most important risk factor. The mortality rate of CHD in young age is lower than the older age, but longer prognosis is relatively poor, particularly when there is reduced left ventricular ejection fraction.

**Keywords :** ACS, Coronary Heart Disease, Dislipidemia, STEMI



(A)





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(B)

Figure 1. ECG examination of the patient (A) first ECG; (B) second ECG