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Abstract: Case Reports

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Personalized and Supervised Approach of Exercise-Based Cardiac Rehabilitation to Improve Functional Capacity and Prognostics in Patient with High Risk Feature Coronary Heart Disease: A Case Report

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Background and aims : The European Society of Cardiology recommended exercise-based cardiac rehabilitation on an individualized basis, taking into account patient's histories, risk factors, preferences, and resources. We aim to report the benefits of personalized and supervised exercise-based cardiac rehabilitation in non-complete revascularization with high risk feature CHD patient.
Case Description : A-60-years-old male presented to ER of Saiful Anwar Hospital due to angina at rest and was diagnosed as NSTEMI with very high risk criteria. He underwent urgent PCI with the results of stenosis 99 % at distal RCA; 80 % at LM; and 90% at osteal-proximal LAD (SYNTAX Score: 68). One DES was inserted at distal RCA. He refused CABG and staged-PCI to complete revascularization and committed to cardiac rehabilitation program. 6MWT was performed before hospital discharge with distance 538 meters. After completing 6 weeks of cardiac rehabilitation program, the treadmill test using Modified Bruce was performed with the results Time of Exercise 16.33 minutes, Maximum Workload 13.5 Mets, Chronotropic Index 65%, HRR-1 15 bpm, HRR-2 24 bpm, DTS -2 and maximum blood pressure 130/80 mmHg. Personalized and supervised approach exercise-based cardiac rehabilitation program is a customized program of exercise prescribed based on the disease and risk factors performed under supervision. This patient with high risk feature of CHD, programmed series of aerobic exercise combined with resistance training under supervision showed improvement of functional capacity and prognostics.
Conclusion :Personalized and supervised approach exercise-based cardiac rehabilitation program improve functional capacity and prognostics in patient with high risk feature of CHD.

Keywords : personalized and supervised, cardiac rehabilitation, coronary heart disease

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Conservative Management for Eisenmenger Syndrome Caused By Undetected Ventricular Septum Defect (VSD) Patients : A Case Report

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Background : Eisenmenger syndrome (ES) is the most severe form of pulmonary arterial hypertension (PAH), caused by a congenital cardiac defect. It is critical to identify this serious condition as soon as possible since once it develops, treatment by medicinal or surgical procedures becomes even more challenging. We presented a case of an adolescent with ES caused by an undetected VSD that improved with medical treatment.
Case Description : A 17-year-old adolescent was brought to the emergency room with shortness of breath that had been deteriorating over the previous year. She has never gotten any treatment. Echocardiography revealed a bidirectional peri-membranous outlet VSD with a dominant left to right shunt. A blood gas analysis revealed respiratory acidosis and type 2 respiratory failure. She was immediately given a phosphodiesterase inhibitor (PDE), diuretic, and digitalis glycoside treatment, followed by calcium channel blocker. The patient was discharged on the 14th day of therapy. Given the similarity of the pathology with PAH, drugs that are usually reserved for PAH may be beneficial in the management of ES. Endothelin receptor antagonists, phosphodiesterase type-5 inhibitors, and prostacyclin derivatives are the three principal pharmacological approaches in the treatment of pulmonary hypertension. These medicines not only improve hemodynamic parameters and exercise ability, but they also improve prognosis in patients with several types of pulmonary hypertension, including ES.
Conclusion : This case highlights that with our improving understanding of ES, non-operative management may have an expanding role in the care of these complex patients.

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Exercise-Based Cardiac Rehabilitation for Mental Disorders Following Recurrent Acute Coronary Syndrome: A Case Report.

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Background and aim: High prevalence of mental disorders in patients with cardiovascular diseases (CVD) was linked to increased mortality risk. Exercise-based cardiac rehabilitation (CR) was recommended in patients following acute coronary syndromes (ACS) to reduce anxiety, cardiac mortality, and rehospitalization. Emphasizing CR's role in improving patients' mental and functional aspects with ACS.
Case description: A 63-year-old male was referred to our CR department after his percutaneous coronary intervention two weeks ago. He has diabetes and hypertension; both are controlled with medications. He got coronary artery bypass grafting in 2018 and his first PCI in 2020. Despite his lifestyle modification and medication compliance, these recurrent coronary events lead him to anxiety and depression. He got 12 sessions of CR phase 2 program with moderate intensity and aerobic exercise, multidisciplinary consult and finished within one month. Compared to the beginning of the CR program, there were improvements in his six-minute walking distance (480m to 545m), functional capacity (8.50 METs to 9.75 METs), and reduced hospital anxiety and depression score (15 to 9 and 8 to 6) at the end of the program. Anxiety and depression following CVD events were joint and had a bidirectional effect of worsening one another. Hence, it reduces patients' quality of life and increases the risk of morbidity and mortality. Phase 2 CR enhances self-esteem and functional capacity through the benefits of guided exercise and comprehensive management by a team-based approach.
Conclusion: Phase 2 CR programs improve mental and functional capacity in the patient following recurrent ACS.

Keywords: Cardiac rehabilitation, cardiovascular disease, exercise

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Quality of Life and Functional Capacity Improvement in SLE-Associated PAH Patient: A Case Report

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Background: Pulmonary arterial hypertension (PAH) is a rapidly progressive pulmonary vascular disease with a multifactorial etiopathogenesis. Optimal and adequate management of PAH assure to improve patient's quality of life (QOL) and functional capacity. Hereby we report optimal treatment of PAH that significantly improved QOL and functional capacity.
Case Description: A 29 years old female admitted with shortness of breath during daily activities since the last 6 months. Right heart catheterization showed primary PAH. Laboratory of antinuclear antibodies (ANA) test was positive. Patient was diagnosed with systemic lupus erythematous (SLE)-associated PAH and received combination of optimal medical therapy (OMT) for SLE and PAH. Initial assessment of functional capacity was measured by six minutes walking test (6MWT) and showed distance of 275 meters, VO2 max 19.8, METs 5.6, and QOL assessed by the Euro QOL-5 Dimension-3 level (EQ-5D-3L). The patient had problems with mobility, self-care and impairment in activity daily living. Six months follow up with optimal medical therapy, showed a significant improvement QOL patient and functional capacity, distance become 450 m, VO2 max 29.6, and METs 8.4.Various studies have showed the significant improvement of functional capacity and QoL in patients affected by PAH, but limited cases on patients with SLE-associated PAH. 6MWT is accessible tool that could be used to evaluate patients with PAH. In SLE-associated PAH combined therapy has shown significant changes in QOL and functional capacity.
Conclusion: Optimal management of SLE-associated PAH can improve the patient's QOL and functional capacity.

Keyword: Pulmonary arterial hypertension, pulmonary hypertension, SLE-associated PAH, functional capacity, quality of life

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Cancer Therapy-Related Cardiac Dysfunction : Hanging By Thread

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Background and aim : Cancer therapy-related cardiac dysfunction (CTRCD) is one of the most dreadful side-effect of chemotherapy and occuring approximately 10% of patients. Detection of CTRCD is the key to initiate cardiac protective strategy to prevent further cardiac function deterioration and increase quality of life (QoL) to a patient with cancer.
Case Description : We reported female 34 years of age with mesenchymal chondrosarcoma which developing progressive dyspnea for the last 6 months, this symptom occurred at low level activities, she denies similar symptoms previously, this patient had been treated with cyclosphosphamid 820 mg, vincristin 2 mg, doxorubicin 82 mg, dacarbizine 420 mg with every 2 weeks per cycle, and no other apparent clinical condition were found. After 6 months following chemotherapy chest x-ray shown cardiac enlargement, Echocardiography shown decreasing LVEF from 65% to 45%, GLS value was -13,4%, hs-Troponin I level was 82 ng/l, 6-MWT walking distance was 294m and VO2 max 18.51 ml/kg/min that showing low functional capacity based on age, CTRCD diagnosis was made then decided to initiate ACE inhibitor and beta blocker therapy to prevent further cardiac deterioration, one-month monitoring indicated gradual improvement of cardiac function with hs-troponin decreased to 22 ng/l, increasing walking distance and VO2 max, and LVEF to 53%.
Conclusion : Optimizing cardiac function from dreadful sequele of CTRCD is possible when we recognize and prevent earlier through optimal imaging, cardiac protective strategy are reasonable to be initiated when GLS value are decreasing, and functional exercise and cardiac biomarkers test could be used as supportive guiding treatment.

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Exercise Training Program in Phase II Cardiac Rehabilitation after Percutaneous Coronary Intervention (PCI): A Case Series

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Background : Cardiac rehabilitation after PCI were still underutilized in our population, despite its benefit on long-term cardiovascular outcome.
Case Illustration : We reported 6 patients, age 48 – 56 year-old, which completed phase II cardiac rehabilitation after PCI. Three patients were stratified as high risk, with history of cardiac arrest in 2 patients. Five patients were participating in the training program 2–4 weeks after PCI/myocardial infarction, including 2 patients with complex PCI and incomplete revascularization. All patients underwent entry test using 6-minute walking test, with estimated functional capacity of 4.13 – 4.58 METS. Exercise prescription was planned based on 6-minute walking distance, with a frequency of 2-times per week for 6-weeks. Training program was conducted in progressive manner with moderate intensity, using walking exercise, treadmill and ergocycle. No adverse event were observed during exercise program. All patients underwent a post-program treadmill stress test, which showed an increase in functional capacity in all patients (7.23 – 10.17 METS). Decrement of resting heart rate were also observed after exercise program in 5 patients, with exception in 1 patient due to a change in medication. Physical exercise has been shown to decrease the rate-pressure product during exertion, with an effect similar to those of non-dihydropyridine-calcium channel blockers and β-blockers. This may be due to decreased resting heart rate and endothelium-dependent vasodilation associated with exercise, leading to an increase in ischemic threshold and functional capacity.
Conclusion : Exercise training program is safe and beneficial in patients after PCI, even early after procedure or in high-risk patients.

Keywords : cardiac rehabilitation, exercise training, percutaneous coronary intervention

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Supraventricular Tachycardia and Right Massive Pleural Effusion in Patient with Chronic Heart Failure: Challenge to treat in a rural hospital

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Background : Supraventricular tachycardia is defined as tachycardia which mechanism involves cardiac tissue from His bundle or above, it increases patient morbidity particularly when symptoms are frequent, and in some patients with ventricular pre-excitation or other comorbidities and can be life-threatening. Pleural effusions in patients with congestive heart failure are typically bilateral or unilateral pleural effusion on the right side. and are likely to be due to left-sided heart failure. In rural setting, it is challenging to diagnose and treat patient with limited diagnostic tools and treatment modalities. Therefore, comprehensive approach using available resource is needed.
Case Illustration : This case describe the clinical presentation of chronic heart failure patient with supraventricular tachycardia and right massive pleural effusion and way to diagnose and treat this patient in rural hospital with limited diagnostic tools and choice of treatments. SVT is a common arrhythmia with good prognosis, however it is still a challenging case to treat with chronic heart failure and massive pleural effusion in rural setting. Furthermore, limited treatment modalities force to choose treatment that is no longer recommended in current guidelines, and close observations of side effects are needed.
Conclusion : From this case we can conclude that it needs deep considerations in diagnosing and treating supraventricular tachycardia in patient with chronic heart failure and massive pleural effusion in rural setting with low availability of treatments, comprehensive approach is needed to establish a diagnosis, administration of available treatment to terminate arrhythmia is possible although it is not supported by current guidelines.

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Exercise Testing in Patient with Chronic Thromboembolic Pulmonary Hypertension, a Case Report

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Background: Pulmonary hypertension (PH) is a condition where in the resting mean pulmonary artery pres- sure (mPAP) is pathologically elevated greater than 20 mm Hg. Chronic Thromboembolic Pulmonary Hypertension (CTEPH) is a consequence of a proinflammatory remodelling in response to pulmonary thromboembolism, which causes persistent structural changes that obstruct pulmonary vasculature. The physiologic derangements of PH result in characteristic abnormalities observed during dynamic exercise and often lead to dyspnea and exercise intolerance.
Case Illustration: A 33 years old male came to Dr. Sardjito General Hospital Outpatient clinic and had complained of shortness of breath. He had diagnosed of CTEPH since 2019 with cardiac MSCT and echocardiography. On physical examination we found elevated jugular venous pressure , cardiomegaly, right ventricle heaving, loud of P2 sound, and Carvallo sign. The ECG showed sinus rhythm with heart rate of 60 bpm, normoaxis, and right ventricle hyperthrophy (RVH). The echocardiography evaluation showed dilated left ventricle and Mild Tricuspid Regurgitation Pressure Gradient (PG) 21 mmHg. The treadmill test was safely performed with Bruce method and patient could finish the exercise with for 07.33 minute with functional capacity related to 8.49 METs. A CTEPH is a consequence of a proinflammatory remodelling in response to pulmonary thromboembolism, which causes persistent structural changes that obstruct pulmonary vasculature. The physiologic derangements of PH result in characteristic abnormalities observed during dynamic exercise and often lead to dyspnoea and exercise intolerance. Impaired cardiac function results in reductions in aerobic capacity. anaerobic threshold (AT), and oxygen consumption (VO_2). Low peak systolic blood pressures (120 mm Hg) during exercise and reduced peak aerobic capacity (VO_{2peak} 10.4 mL/kg/min) are indicators of poorer survival in PH. Strenuous physical activity be avoided due to a perceived risk of syncope, sudden death, and worsening right heart failure.
Conclusions: PH patients demonstrate numerous indicators of decompensated cardiopulmonary physiology during exercise. Exercise testing established for assessing the degree of exercise intolerance and dyspnoea, providing important prognostic information for patients with CTEPH.

Keywords: Chronic Tromboembolic Pulmonary Hypertension, Pulmonary Hypertension, Exercise Testing

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Effect of ARNI and SGLT-2 Inhibitor in Combination with Extracorporeal Shockwave Myocardial Revascularization Treatment to Improve Outcomes and Prevent Rehospitalization in Elderly with HF, DM, and CKD: The Triple Trouble

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Background and aims: Approximately 16% of patients with heart failure (HF) have both diabetes mellitus (DM) and chronic kidney disease (CKD), which are associated with substantially increased risk for hospitalization and mortality. We report a case of HF with reduced ejection fraction (HFrEF), DM, and CKD in elderly.
Case Description: A 70-year-old male with a history of CABG surgery 10 years ago, was diagnosed with HFrEF, DM, and stage 4 CKD. For the past 7 years, he often developed refractory angina, dyspnea on exertion, and rehospitalization despite optimal medical therapy. Considering his refractory symptoms, sacubitril/valsartan (ARNI) was started 1.5 year ago, three cycles of ESMR treatment was given one year ago, and empagliflozin was added 3 months ago. The 1.5-year follow-up after treatment showed patient's clinical improvement from NYHA IV to II, CCS III to I, and no history of rehospitalization during follow-up. Most importantly the improvement of LVEF by echocardiography from 20% to 32%, and 6MWT from <300 m to 410 m. His quality of life also showed a remarked improvement, assessed by MLHF questionnaire. The 2021 ESC guidelines have recommended ARNI and SGLT-2 inhibitor as the main pillars of HF treatment in addition to beta-blockers and mineralocorticoid receptor antagonists. Several studies suggest the use of ARNI and SGLT-2 combination in HF patients with DM and CKD could give cardiac and renal protective effects, thus preventing adverse cardiovascular events. In the previous case study, ESMR therapy has been shown to reduce angina, improve left ventricular function, and clinical outcomes in ischemic heart failure patients.
Conclusion: The use of ARNI and SGLT-2 inhibitor in combination with ESMR treatment is considered safe in our patient, as it can improve symptoms, cardiac function, quality of life, prevent rehospitalization and mortality in 1.5-year follow-up.

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STEMI After Negative Exercise Stress Test in Anabolic-androgenic-steroid Abuser

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Background and aims : Abuse of anabolic-androgenic-steroids (AAS) commonly happens in athletes aiming at increasing muscle mass although chronic overdose of AAS could endanger cardiovascular system. To find out whether STEMI after false negative exercise stress test (EST) related to thromboembolic process.
Case Description : A 46-year-old man had second heart attack of STEMI and underwent primary percutaneous coronary intervention (PCI). Surprisingly, PCI catheter could not deploy stent in right coronary artery because of severe thrombosis troubling operator and worsened decreasing blood pressure. Patient had false negative EST (METs of 17.5, low risk Duke Treadmill Score [DTS] of +5) 4 months before. A month later, he had first inferior STEMI managed by fibrinolytic with good result. He was light smoker with hypertension. He was a bodybuilder with unsupervised use of trenbolone-enanthate 200 mg 2x/week, nandrolone-decanoate 250 mg 2x/week, and testosterone-enanthate 300 mg 2x/week intramuscularly in cycles of 8 months injection followed by 2 months intermission for 5 years. He still used half of usual doses of nandrolone-decanoate and testosterone-enanthate despite his first STEMI. Echocardiography revealed LV concentric remodeling and LA mild dilatation. Chronic overdose of AAS abuse may trigger STEMI through hypercoagulability which dominantly due to thrombotic pathway with less stenotic plaques and atherogenic mechanism by increasing LDL and atherosclerotic plaque volume causing arterial and aortic stiffness. EST has low accuracy in identifying coronary artery disease caused by obstruction. Coronary angiography on false negative EST usually reveals non-significant stenosis of 50-60%.
Conclusion : STEMI in AAS abuser occurred due to thromboembolic process.