Diagnosis is made by echocardiogram; however, this procedure is not widely available, especially in remote hospitals. Various electrocardiogram (ECG) changes, including the Crochetage sign, may give important clues to aid in diagnosis. We report a case of a young woman with a Crochetage sign in her ECG later diagnosed with ostium secundum ASD.

Case Presentation An 18-year-old lady had multiple visits to our centre with intermittent palpitations and dull, aching chest discomfort with progressive exertional dyspnoea over the past three years. She did not experience pedal oedema, orthopnoea, or paroxysmal nocturnal dyspnoea. She was initially treated for gastritis and unstable angina. Upon initial questioning, there were no cardiovascular risk factors or significant family history. Clinical examination revealed an ejection systolic murmur over the left sternal edge with fixed splitting of the second heart sound. She was not cyanosed and was clinically euthyroid. Her ECG on presentation showed sinus rhythm and an incomplete right bundle branch block (RBBB) with a notch near the apex of the R wave in inferior leads, also known as the Crochetage sign. There was right atrial enlargement in her chest radiograph. An urgent echocardiogram was performed in a tertiary centre and confirmed the diagnosis of ostium secundum ASD with pulmonary hypertension.

Discussion ASD is a common acyanotic congenital heart disease diagnosed during adulthood. Palpitations and reduced effort tolerance are commonly reported symptoms. Clinical findings include a wide, fixed splitting heart sound with an ejection systolic murmur. The Crochetage sign is an independent ECG finding in ASD, especially in large ASD with shunt. Specificity and sensitivity increase further with the presence of RBBB.

Conclusion In a center with limited resources, the identification of the Crochetage sign in a patient's ECG is vital to tailor an appropriate investigation for the diagnosis of ASD.

APCU 18 A SYSTEMATIC REVIEW: BARRIERS HINDERING PATIENTS' PARTICIPATION IN CARDIAC REHABILITATION PROGRAMS

[1]Dona Cyreline Chin, [2]Faridah Mohamad Said, [3]Raynee Kumilau. *[1]Malaysian Ministry of Health Training Institution, Kota Kinabalu, Sabah, Malaysia; [2]Lincoln University College, Kuala Lumpur, Malaysia; [3]University Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia*

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Introduction Cardiac rehabilitation (CR) programs are essential for the recovery and secondary prevention of cardiovascular diseases. Despite the proven benefits of such programs, participation and completion rates remain suboptimal. This systematic review aims to identify literatures that systematically analyse and synthesize the factors and barriers influencing patients' participation in cardiac rehabilitation programs.

Methods The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used. Initial keywords for the precise search were based on the Boolean operators. A comprehensive literature search was conducted across PubMed, ScienceDirect, Cochrane Library, ProQuest, and Scopus databases. Studies on factors and barriers influencing patients' participation in cardiac rehabilitation programs were included in the review. Data extraction and quality assessment were performed independently by two reviewers. The data were assessed for methodological quality using a Critical Appraisal Skills Program (CASP) checklist.

Results A total of 10 studies met the inclusion criteria, encompassing a diverse range of populations and settings. Commonly identified factors and barriers include logistical/distance issues, financial issues, time constraints, health status, and transportation issues. Barriers related to the healthcare system, such as inadequate referral processes and insufficient patient education, were also found to be significant.

Discussion This review focuses on the barriers influencing patient participation in CR programs regardless of the phase. As the selected studies cover both developing and developed nations, the results of this current study can be generalized across various countries. The most prominent CR barriers are related to logistical, financial, and psychosocial factors.

Conclusions Multiple factors and barriers hinder patients' participation in cardiac rehabilitation programs. Addressing these barriers through targeted interventions is vital to enhance patients' engagement and improve the efficacy of cardiac rehabilitation programs. Future research should focus on developing and evaluating strategies to overcome these obstacles.

APCU 19 COMBINATION OF MECHANICAL TR WITH ESRF

[1]JT Wu, [1]CK Wong, [2,3,4]O Mohd Khairi, [2]MY Nor Mardiah, [1]J Muhammad Izzad, [1]R Ahmad Wazi, [2]Haniff WI WY. *[1]Cardiology Unit Medical Department, HSNZ; [2]Cardiology Department, Hospital Pakar Universiti Sains Malaysia; [3]Cardiology Department, Hospital Sultanah Bahiyah; [4]School of Medical Sciences, Universiti Sains Malaysia, Malaysia*

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Introduction Precautions for implanting cardiac implantable electronic devices (CIED) into patients with end-stage kidney disease (ESKD) are more prevalent nowadays. However, concerns about haemodialysis in patients with CIED are rare.

Case Presentation A 45-year-old woman with underlying type 2 diabetes mellitus hypertension. She was diagnosed with a complete heart block, which required a permanent pacemaker in 2007, and underwent a box change in 2017. She was further complicated with ESKD, requiring regular peritoneal dialysis since 2019. Unfortunately, she had to convert to haemodialysis in May 2024 due to recurrent peritonitis. The nephrology team referred us as the patient had been oxygen-dependent since starting haemodialysis through internal jugular catheter insertion. Upon review, she had right ventricular failure: oedematous over her lower extremities and had sacral oedema and ascites; a chest drain was inserted for persistent pleural effusion. A loud systolic murmur was heard over the left sternal edge with loud P2. Electrocardiogram shows RV strain pattern. Echocardiography revealed severe tricuspid regurgitation (TR) with a systolic pressure gradient of 80mmHg. 3D echocardiography showed pacemaker wire impinging septal leaflet, causing mechanical TR. Pacemaker interrogation found 99.9% ventricular pacing. Consensus between managing teams and patients was made, and volume control was decided through fluid restriction and haemodialysis to maintain ideal dry weight as guided by a body composition monitor. She eventually developed a hospital-acquired infection, worsening pulmonary hypertension, leading to her demise within 3 months of haemodialysis.

Discussion Patients with ESKD have shorter lives compared to the healthy population. A study found higher mortality in the first 5 months for those with peritoneal dialysis switching over to haemodialysis. Our patient developed severe TR and right ventricular failure after starting with haemodialysis

through the internal jugular catheter, with echocardiography evidence of pacemaker wire causing mechanical free flow TR. She was, unfortunately, pacemaker dependent. Transvenous lead retraction and any form of tricuspid valve intervention (surgery / transcatheter edge-to-edge repair / transcatheter tricuspid valve transplant) were too invasive or expensive treatment for her.

Conclusion Haemodialysis in ESRD patients may worsen underlying CIED-related TR and is expensive to treat. Serial TR assessment in CIED patients is essential.

APCU 20 UNUSUAL AETIOLOGY AF YOUNG STROKE: CARDIAC MYXOMA

[1]AH Tasniim, [1,2]AH Sanihah, [2,3]Siti Aisyah H, [2,3]Haniff WI WY, [2,3]Y Zurkurnai. [1]*Neurology Unit, Department of Internal Medicine, Hospital Pakar Universiti Sains Malaysia*; [2]*School of Medical Sciences, Universiti Sains Malaysia, Malaysia*; [3]*Cardiology Unit, Department of Internal Medicine, Hospital Pakar Universiti Sains Malaysia*

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Introduction Atrial myxoma is a significant cause of stroke in younger individuals. Although it is a rare condition, it accounts for up to 0.5% of all ischemic strokes due to embolization from the cardiac tumor. Despite its sporadic occurrence, delayed treatment can lead to serious systemic and cerebral embolic events.

Case Presentation We reported a case involving a 45-year-old man with underlying schizophrenia complicated with secondary parkinsonism. He presented to us with a one-day history of dizziness, gait unsteadiness, left facial asymmetry, and drooping of the left eye. Physical examination revealed left eye internuclear ophthalmoplegia and left 3rd and 7th cranial nerve palsy. Otherwise, his limb tone was normal, and muscle strength was 5/5 throughout. An urgent CT scan of the brain showed multiple old infarcts. MRI of the brain revealed multiple lesions suggestive of arterial infarcts at left paramedian midbrain, interthalamic adhesion, and bilateral thalamus lesion and an incidental finding of a cavernoma in the right cerebellum. Echocardiography demonstrated a good ejection fraction of 61% but revealed a left atrial mass measuring 7.2–9.6 cm^2. He was referred to the cardiothoracic team urgently and successfully underwent complete resection of the atrial myxoma within same admission. Histopathology confirmed the mass as a cardiac myxoma. Post-operatively, he was seen in the outpatient clinic and showed minimal residual neurological deficits.

Discussion Atrial myxoma is a benign tumour yet due to its unfavourable location – it is perceived as functionally malignant. They present with a wide range of symptoms, from being asymptomatic or discovered incidentally to causing severe, life-threatening conditions. Young stroke is one its neurological manifestation through cerebral embolization. Accurate and timely diagnosis is crucial to prevent complication. The embolic potential of a myxoma seems to be linked more to its mobility than its size. Surgical resection of cardiac myxomas generally has a positive outcome. The 20-year survival rate post-surgery is approximately 85%, indicating a favourable long-term prognosis for most patients. Additionally, the recurrence rate for atrial myxomas after resection is relatively low.

Conclusion Given its heterogeneity in presentation, cardiac myxomas can frequently be overlooked during initial evaluation. Therefore, it is crucial for clinicians to thoroughly investigate young strokes and consider potential cardioembolic causes. Even a simple bedside echocardiography can be effective for early detection of such tumours.

APCU 21 CHALLENGING CASE IN ROUTINE MILITARY HEALTH ASSESSMENT: OVERLOOKED CHEST X-RAY FEATURES OF PULMONARY HYPERTENSION LEADING TO A DIAGNOSIS OF NEGLECTED SECUNDUM ATRIAL SEPTAL DEFECT

[1]Hari Krishna Rau Subbarao, [1]Muhamad Razi Zulkufli, [2]Mohd Rafizi Mohamed Rus. [1]*Department of Medicine, 94 Hospital Angkatan Tentera Malaysia, Kem Terendak Melaka, Malaysia*; [2]*Department of Medicine, Hospital Angkatan Tentera Tuanku Mizan, Kuala Lumpur, Malaysia*

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Introduction It is difficult to diagnose atrial septal defect (ASD) in asymptomatic young healthy individuals even with ASD being the most common congenital heart disease. If left untreated, it leads to pulmonary hypertension (PHT) in 6% to 35% of cases.

Case Presentation During routine military health assessment in September 2023, a 30-year-old active serviceman was noted to have an abnormal chest X-ray (CXR) which was reported as right hilar haziness consistent with chronic infection resembling Pulmonary Tuberculosis (PTB). Unfortunately, no further assessment was done until he was called back 9 months later for re-evaluation. Repeated CXR showed similar findings and working diagnosis of Latent TB infection (LTBI) was made as he remained asymptomatic. The case was discussed with us for initiation of LTBI treatment. Upon revisiting both CXRs, noted the signs of left main pulmonary artery (mPA) enlargement was overlooked and confirmed with lateral view CXR. His ECG changes were not classical for PHT, but incomplete RBBB with RAD and S wave in V6 in addition to Crochetage Sign in Lead 3 and aVF raised the suspiciousness of neglected ASD with PHT. His Echo confirmed the presence of mild PHT changes with enlargement of right sided chambers. Although resting bubble test was negative but with modified Valsalva manoeuvre early bubble crossing was detected with evidence of negative filling defect. TOE confirmed 1.3cm Secundum ASD. He was then referred for device closure under IJN.

Discussion The above-mentioned ECG changes is common among Athlete's heart especially in men. Hence, in the setting of managing an active military personnel, enlargement of the mPA is often overlooked and reported to be normal especially in young patient with lower lobe infection. If CXR changes are interpreted along with the ECG findings, pathological cause such as PHT can be diagnosed.

Conclusion Knowing the art of assessing medical health in military personnel is an essential component for early detection and diagnosis of Secundum ASD with PHT by careful ECG and CXR evaluation. If left undiagnosed, ASD can lead to multiple long-term complications which can be mitigated with early and timely defect closure.