

The Second National Congress  
Progress in Cardiology and Cardiovascular Surgery  
with International Participation

together with

The Fourth International Symposium of Pediatric  
Cardiology and Pediatric Cardiovascular Surgery

17<sup>th</sup> – 19<sup>th</sup> May 2018

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Iuliu Hațieganu Medical

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# - Clujul

## Medical - Journal of Medicine and Pharmacy

Supplement No. 3, Vol. 91, 2018

p-ISSN 1222-2119, e-ISSN 2066-8872

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# Medical - Journal of Medicine and Pharmacy

Supplement No. 3, Vol. 91, 2018

p-ISSN 1222-2119, e-ISSN 2066-8872

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## A GIANT UNRUPTURED ANEURYSM OF SINUS OF VALSALVA

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**Background.** Aneurysm of sinus Valsalva is a rare congenital or acquired aortic root anomaly. Unruptured sinus of Valsalva aneurysm is often asymptomatic and usually discovered incidentally, although in rare cases, can cause severe complications due to compression of adjacent cardiac structures or due to its rupture.

**Case presentation.** We present the case of a 49-year-old man with an unruptured aneurysm of 53/51mm of the right coronary sinus of Valsalva. The patient was admitted to our hospital for angina over the past 2 years. A transthoracic echocardiography, confirmed by transesophageal echocardiography and contrast-enhanced computed tomography of the heart, described a giant unruptured aneurysm of right sinus of Valsalva, partially thrombosed, which produced right ventricular outflow obstruction. Coronary angiography revealed indeed a large aneurysm of the right coronary sinus but without visualisation of the proximal tract of the right coronary artery; the left main coronary artery and its branches appeared normal. The patient underwent successful resection of the aneurysm, aortic root reconstruction with a Dacron tube graft and implantation of a saphenous vein graft bypass on the right coronary artery.

**Conclusion.** Myocardial ischaemia secondary to sinus of Valsalva aneurysm is a potentially negative prognostic sign. This fact, the possible dreadful complications of a coronary sinus aneurysm left untreated and the poor outcome obtained with conservative treatment made us consider surgical therapy in the case of our patient. Surgical repair is the best choice of treatment, with low morbidity and mortality and excellent long-term prognosis.

**Keywords:** sinus of Valsalva, aneurysm, aorta

## UROLOGICAL TUMORS LINKED TO VASCULAR AGE PRIOR TO CANCER THERAPY – PARANEOPLASTIC VASCULAR INVOLVEMENT?

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**Objectives.** Cardio-oncology is an emerging field with some understanding of cancer-related cardiac or vascular involvement. Specific cancer treatments may prone to cardiotoxicity. Predictability of patient vulnerability in chemotherapy is one of today major concerns. Some data published lately drawn the attention on cardiac dysfunction in oncological patients before starting any targeted treatment. Preoperative serum levels of cardiovascular hormones BNP and NT-proBNP were markers of tumor progression, as well as indicators of subclinical functional and structural myocardial damage in patients with advanced renal cell carcinoma (RCC). Even more, an elevated level of troponin I was considered a paraneoplastic cardiac involvement in a patient with RCC. We hypothesized that in patients with newly diagnosed urologic oncologic pathology, before starting any cancer related therapy, cardiac and/or vascular alteration may already be present.

**Materials and methods.** For a 6-month period, all subjects under 65 years, newly diagnosed with urological malignant tumors in Urology Department of Municipal Clinical Hospital, underwent transthoracic 2D echocardiography using an Aloka-Hitachi Alphasound ultrasonographic system. In terms of cardiovascular risk, vascular age was assessed according to Framingham vascular age, a score available on line at <http://www.mdcalc.com/framingham-coronary->

heart-disease-risk-score. We also determined the vascular age assessed through arterial stiffness assessment using photoplethysmography (MicroMedical London, UK). All patients were assessed for infraclinical myocardial damage using HS-Troponin T, creatinphosphokinase-MB and NT-proBNP).

**Results.** Sixty-one patients were included in the study. The median age was 54 (CI: 49.00-65.00) years, 41 (68.3%) males. The systolic cardiac function in all the patients was normal: left ventricular ejection fraction (LVEF)=60.50 (58.03-64.96) %. The diastolic function was also unmodified: E=69.00 (63.60-74.78) cm, A=67.00 (56.82-74.39) cm, E/A=1.1(0.98-1.36), IVRT=84.00 (75.66-92.33) ms. Vascular age assessed through arterial stiffness was significantly higher in comparison with biological age (62.00 (47.58-69.00) vs 54.00 (49.00-65.00),  $p=0.03$ , at a stiffness index (SI) median value of 10.41(8.79-11.19) m/s. In the same topic, vascular age assessed by Framingham score was significantly increased compared to biological age (60.50 (55.48-67.25) vs 54.00 (49.00-65.00)),  $p=0.002$ . Using multivariate analysis, vascular age evaluated through SI remained significantly higher compared to biological age, irrespective of Framingham score ( $p=0.01$ ). The myocardial damage assessed biochemically proved to be unmodified, as shown by troponin level (6.27 (4.63-7.20) pg/l, MB-CK (17.00 (15.00-18.00)) UI/l and NT-proBNP (85.02 (66.48-141.11)) pg/mL. The data published until now in this field is poor, but there are some researches that reported an increase of NT-proBNP and troponin (HS Troponin T), depending on tumor stage, which are also predictors of mortality, independent of age, gender, stage and cardiac comorbidities. In 2008, as a result of the Framingham study, cardiovascular risk tables were published, which incorporated a new concept: the vascular age, or the age of the vascular system of a patient with different cardiovascular risk factors. Increased arterial stiffness represents an early, subclinical damage of the arterial system, with impact on cardiovascular morbidity and mortality. A higher vascular age assessed through arterial stiffness, irrespective of traditional risk factors impact, is may suggest a possible paraneoplastic effect of tumor on arterial wall.

**Conclusions.** In young patients with malignant urological tumors, without any personal history of cardiovascular disease, we did not find any imagistic or biochemical proof of cardiac dysfunction. On contrary, vascular age assessed through arterial stiffness exceeded Framingham vascular age. This finding suggests a subclinical vascular damage in naïve treatment cancer patients.

**Keywords:** cancer, urology, cardiac toxicity, arterial stiffness

## HISTOGENESIS OF CYSTIC EPITHELIAL STRUCTURES IN SOME CARDIAC TUMORS

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Cardiac tumors are rare tumors with histogenesis incompletely elucidated. In the atrial septum we can discover inclusions believed to be derived from the primitive endoderm. In the atrial septum Prichard described the subendothelial vasoformative reserve cells. This structure are suggested to be related with cardiac myxoma.

This paper presents the histopathology of the cystic tumor of the atrioventricular node (one case), and aspects derived from the presence of the glandular structures in cardiac myxoma (in our experience in four cases).

We make a short review of the morphologic correlation and the differential diagnosis. We present the histogenetic conclusions of both entities, in relation with the literature data.

Cardiac myxoma is a benign tumor with the origin in the pluripotent mesenchymal progenitor cells. Cystic tumor of the atrioventricular node is not classified as a neoplasm but as an developmental anomaly of epithelial endodermal origin.

**Keywords:** cystic tumor of the atrioventricular node, cardiac myxoma

## USING CONSENSUS TERMS AND DEFINITIONS OF DEGENERATIVE NON-INFLAMMATORY AORTIC HISTOPATHOLOGY (2015)

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Dissection of the aorta occurs rarely, 2.0-4.04 cases/ 100000/year. We studied 48 consecutive cases of dissection of the aorta with a mean age 64.2 yrs and a wide range from 26 to 78 yrs., men (26.16% women). The surgical specimens were evaluated histologically using the terminology adopted by the members of consensus committee of the Society of Cardiovascular Pathology and the Association of Cardiovascular Pathology. Medial degeneration is graded mild, moderate, severe. This paper correlates the grading system of aortic degeneration with the age and the associated risk factors, hypertension, genetic syndromes. We discuss the extension of dissection and the extension of the degeneration and the dissection's complication. There is a chronic dissection of the aorta in four cases. The paper is rich illustrated in correlation with the literature data.

Hypertension is the most critical factor contributing to the aortic dissection. Consensus grading scheme to evaluate medial degeneration is important for routine surgical pathology reporting.

Aortic specimens from individual under the age of 40 yrs with mid or worse medial degeneration should raise suspicion for an undelying genetic cause.

**Keywords:** aortic dissection, medial degeneration

## SOLUTION FOR EXTREME POSTTRAUMATIC LIMB SALVAGE: A CATHOLIC MARRIAGE - VASCULAR AND PLASTIC SURGERY

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**Objectives.** A challenge for plastic and vascular surgeon is severe limb trauma. A careful examination with identification of the injured structures is mandatory for decision making. Several extremity injury scores have been described in order to establish the prognosis and help in the decision making. There is no single accepted score with very high predictive value regarding the treatment decision.

**Materials and methods.** Over a 6-year period, patients with 12 "mangled extremities" (three upper limb and nine lower limb injuries) have been admitted to our hospital. Bone fractures were present in six cases. Acute ischemia was present in 6 cases. Vascular reconstruction was needed in all patients. Free flaps have been used and included: latissimus dorsi -5 patients; anterior seratuss- 1 patient; omentum – 1 patient; AMT – 4 patients. One patient had a pedicled latissimus dorsi.

**Results.** Successful lower limb salvage was possible in 11 cases. Below knee amputation was performed in the case where the ischemia was irreversible. Local wound infections were present in 5 cases. Four of them were reoperated for drainage and secondary procedures as skin graft.

**Conclusions.** Primary vascular reconstruction associated with good flap coverage is the best solution for salvage of severely traumatized limb.

**Keywords:** acute ischemia, vascular reconstruction, free flap

## ECHOCARDIOGRAPHY IN DIABETIC CARDIOMYOPATHY

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The association between heart failure and diabetes is more and more common in medical practice due to the increasing prevalence of both these conditions, primarily caused by an increasingly ageing population and an unhealthy lifestyle, translated into a high prevalence of obesity and the lack of physical activity. Diabetic cardiomyopathy was first described in the 1980s, when evidence showing that diabetes leads to a distinct form of cardiomyopathy, independent of coronary artery disease or hypertension, was gathered. The positive diagnosis of diabetic cardiomyopathy just by echocardiography is challenging, because there are no pathognomonic signs. However, thanks to the newer echocardiographic techniques, such as deformation imaging, it is now easier to describe the morphology and function of diabetic hearts. The early stages of diabetic cardiomyopathy are marked by a deterioration of longitudinal systolic function coupled with a compensative elevated radial function. Diastolic dysfunction is another early sign. As the disease progresses the functional deterioration is accompanied by morphological changes, such as left ventricular concentric hypertrophy and fibrosis. The more advanced stages of the illness are characterized by a reduced ejection fraction and finally ventricular dilatation. End stage disease may mimic a dilative cardiomyopathy, making the etiological diagnosis even more difficult.

**Keywords:** echocardiography, diabetes, cardiomyopathy

## FAVORABLE EVOLUTION FOLLOWING REVASCULARIZED STEMI INFARCTION - CLINICAL CASE

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**Objectives.** Myocardial infarction is the necrosis of a more or less important part of myocardium, following a sudden obstruction of a coronary artery. Myocardial infarction is a more and more common affection that has multiple etiological causes. Most of the time is diagnosed following symptom assessment and paraclinical investigations. Severity of affections in relation to post-revascularization favorable to a elderly patient has caught our attention in this case.

**Materials and methods.** The 77-year-old patient is present in the Emergency Reception Unit accusing retrosternal pain, dyspnea of rest and deep sweating. As a personal pathological history the patient presents: atrial fibrillation with ventricular average allure, grade II hypertension and type II diabetes for which she had a background medication. At the clinical examination the general condition is altered, shows grade I obesity with BMI=32.3, the skin is pale and wet. There is bilateral vesicular whispering, bilateral crackling rales, respiratory frequency is 20 breath/min., SaO<sub>2</sub>=90%, arrhythmic cardiac noises with no detectable breaths, blood pressure is 80/55 mm/Hg and VA=45 bpm. The ECG reveals atrial fibrillation, ST segment elevation in DIII, aVF and ST segment depression in DI, aVL, V2-V5. Biological exploration indicate Leukocytosis, increase of transaminases, Hyperglycemia (Glucose=499 mg/dl), Troponin=1.59 ng/dl. Echocardiography: Hypokinesis of the inferior-lateral wall of the left ventricle, concentric hypertrophy of the left ventricle, diastolic dysfunction with abnormal myocardial relaxation. Coronarography: Occlusion of the right coronary

artery, 75-90% stenosis lesion in the previous descending artery. The coronary revascularization is done with percutaneous transluminal angioplasty with Biomatrix 3.5 / 28 mm stent implantation (DES) in the right coronary artery and Biomatrix 3.0 / 8 mm (DES) stent at previous descending artery level.

**Results.** The evolution of the patient after revascularization is favorable with remission of symptoms, improvement of clinical condition (blood pressure is 140/75 mm/Hg, VA=60 bpm, SaO<sub>2</sub>=98%) and the biological parameters (WBC=9 870\*10<sup>3</sup>, Glucose=135 mg/dl).

**Conclusions.** What surprises us in this case is a favorable evolution, but which needs to be monitored carefully, despite the fact that myocardial infarction STEMI appears three times as often in people with chronic kidney insufficiency in which it has a bad prognosis.

**Keywords:** IRC, diabetes, revascularization, stent

## UPDATING THE DIABETIC FOOT TREATMENT ALGORITHM

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Patients with diabetes have a high risk of developing chronic, non-healing wounds. However, certain patient characteristics put these individuals at risk for development of severe and complex diabetic foot ulcers. Common risk factors for diabetic foot ulcer development include a previous amputation, a previous diabetic foot ulcer, a foot deformity, neuropathy, vascular disease, and duration of diabetes

If surgery is required, the goal is to remove all nonviable tissue or bone, provide mechanical balance, and create a functional foot and ankle. If infection is present, treatment should include care, extensive debridement is recommended as well as potential revascularization surgery if warranted.

While previous diabetic foot treatment algorithms exist, they do not contain a complete representation of currently available treatment options. In the literature, over 1,000 published articles have been identified that refer to the treatment options of diabetic foot ulcers. Why should you change these algorithms? For three essential reasons...

## I CAN SEE YOUR HEART BEAT- A RARE CASE OF ECTOPIA CORDIS IN A NEWBORN

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**Objectives.** Ectopia Cordis is a rare congenital malformation in which the heart is located outside the thorax. It is frequently associated with Cantrells Pentalogy, with a prevalence of 5.5–7.9 per million live births. The thoraco-abdominal type has a very low survival rate after surgical repair and it represent a great challenge especially when the heart associates intracardiac defects.

**Materials and methods.** A 14 days old patient, born at 39 weeks of pregnancy via C-section, with APGAR score of 1/1 min, 3/10 min, 8/15 min, who was diagnosed prenatally with Cantrells Pentalogy and Ectopia Cordis refers to the IUBCVTs Department of Cardiovascular Surgery, for treatment. The thoraco-abdominal CT scan with contrast showed single left ventricle with an apical dilatation located subxifoidian, hypoplastic right ventricle, and ductal dependent pulmonary circulation. The left lobe of the liver was partially herniated.

**Results.** Median sternotomy extended thoracoabdominal was performed. At heart inspection, the apical and the medioventricular region of the left ventricle could be seen. In total CPB with aortic and right atrium cannulation, the patent ductus arteriosus was ligated. The heart was placed in the left hemithorax and a 4mm Goretex shunt was placed end-to-side fashion between the brachycephalic trunk and the right pulmonary artery. The heart was covered with a Cormatrix patch. During the whole intervention the patient went to multiple episodes of V-fib which required the use of a defibrillator. After prolonged circulatory arrest and hemodynamic instability the patient went off bypass with high doses of cardiac inotropes. The chest was left open. Immediately post surgery the status was deteriorating with hemodynamic drop and cardiac arrest, unresponsive to CPR.

**Conclusions.** The surgical procedure and the post-operative status of the patients with this malformation are extremely risky, moreover if there are other cardiac malformations on top. By placing the heart into the thorax, a compression is exerted on the left lung, prolonging the extubation time. Also, the torsion of the heart muscle leads to severe arrhythmic consequences in almost all the cases ending in death.

**Keywords:** Ectopia Cordis, single right ventricle, Cantrells Pentalogy

## CARDIAC ASSESSMENT OF THE PATIENT WITH DIGESTIVE CANCER

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**Objectives.** Approximately 80,000 new oncological cases are diagnosed annually in Romania, with incidence and mortality doubling over the past twenty years. In Romania, since 1989, the incidence of digestive neoplasia pathology has increased threefold, with colorectal cancer accounting for 1 out of 10 deaths due to neoplasia. Romania ranks 1st in Europe in terms of cardiovascular mortality, with an average of 108 deaths / 100,000 inhabitants, compared to the EU average (about 43 deaths / 100,000 inhabitants). Although there appear to be two different categories of illness, risk factors are largely similar (eg obesity, smoking, diabetes, diet, etc.), suggesting the presence of common points in the genesis and evolution of these diseases. By controlling cardiovascular risk factors, both the risk of developing a digestive neoplasm and subsequently the incidence of cardiotoxicity of chemotherapy is reduced.

**Materials and methods.** We have comprehensively evaluated consecutive, non-cardiac patients newly diagnosed with digestive cancer in the Cluj-Napoca Municipal Clinical Hospital. Patients over 65 years and those with a history of cardiovascular disease were excluded. We performed for each patient: biomarkers of myocardial injury, assessment of peripheral vascular rigidity by photoplethysmography and advanced methods of evaluation of carotid rigidity (eTracking), transthoracic echocardiography and, in selected cases, 24h monitoring ECG.

**Conclusions.** This presentation aims at outlining the cardiovascular status of the newly diagnosed patient with digestive cancer and their workup algorithm.

**Keywords:** cardiac evaluation, digestive, cancer

## PARTICULARITIES OF SECONDARY PHARMACOLOGICAL PREVENTION IN WOMEN WITH ISCHEMIC HEART DISEASE AND RHYTHM AND CONDUCTION DISORDERS

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The incidence and prevalence of cardiovascular disease among women has increased significantly over the last 50 years. However, women diagnosed with ischemic heart disease benefit to a much lesser extent from pharmacological treatment for secondary prevention. Crusade analysis confirms suboptimal use of medication for patients diagnosed with N-STEMI, both during admission and discharge, receiving a lower percentage of betablockers, antiplatelets and anticoagulants. All this, in the context of continuing problems with the non-recognition of atypical symptoms of coronary heart disease in women, and consequently their under-investigation and treatment. This paper aims to highlight the particularities of treatment in women with ischemic cardiopathy, associated with rhythm and conduction disorders, included in a study of 150 female patients admitted to the Rehabilitation Hospital Cluj-Napoca, Department of Cardiology.

## LEFT VENTRICULAR NONCOMPACTION CARDIOMYOPATHY

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**Objectives.** Left ventricular noncompaction cardiomyopathy (LVNC) is a myocardial disorder characterized by increased left ventricular trabeculation, deep intertrabecular recesses in the ventricular wall and noncompacted-to-compacted ratio > 2. The diagnosis is reached by echocardiography. MRI provides additional morphological and functional information. Clinical manifestations of LVNC are variable, from no symptoms to heart failure, arrhythmias, thromboembolic events or even sudden cardiac death. The disease can be an autosomal, X-linked or mitochondrial disorder. Prognosis is incompletely characterized in children. The risk of sudden death seems to be associated with ventricular dilation, systolic dysfunction and arrhythmias.

**Materials and methods.** We describe a case of left ventricular noncompaction cardiomyopathy in a 11 year patient, associating epilepsy and mental retardation. Literature review on etiology, clinical presentation, diagnosis and management of noncompaction cardiomyopathy was also performed.

**Results.** A 11-year-old patient presented with severe heart failure. Echocardiography was suggestive of isolated noncompaction of left ventricle, documenting a severe left ventricle systolic dysfunction with LV ejection fraction less than 20%. The patient presented high values of NT-pro-BNP. We did not recorded arrhythmias or cardiac embolic events. Treatment with diuretics was started and antithrombotic therapy was added.

**Conclusions.** Isolated left ventricular noncompaction cardiomyopathy is a rare form of primary genetic cardiomyopathy. Our patient presented with severe left ventricular systolic dysfunction and congestive heart failure. Echocardiography was diagnostic. The association with epilepsy and mental retardation may orientate toward a genetic syndrome. Accurate diagnosis is the key to minimizing risks associated with LVNC.

**Keywords:** left ventricular noncompaction, echocardiography, child

## ECHOCARDIOGRAPHIC CHANGES IN PATIENTS WITH LYSOSOMAL STORAGE DISEASES

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**Objectives.** Introduction. Lysosomal storage diseases (LSD) are a heterogeneous group of rare inherited disorders characterized by the accumulation of undigested macromolecules, which results in cellular dysfunction and clinical abnormalities. The prevalence and severity of cardiovascular disease in patients with LSD is variable and consist in severe cardiac valve disease, ventricular hypertrophy, dilated cardiomyopathy and pulmonary hypertension. The aim of the study was to characterize the echocardiographic changes in patients with LSD.

**Materials and methods.** We evaluated 106 patients: 73 patients with Gaucher disease; 24 patients with mucopolysaccharidosis (MPS): 5 patients with MPS type I, 18 patients with MPS type II, one patient with MPS type IV; 2 patients with Pompe disease; 2 patients with mucopolipidosis, one patient with Fabry disease, 4 patients with gangliosidosis, 2 patients with Niemann-Pick disease. We assessed the function of valves, left ventricular chamber dimensions, septal and posterior ventricular wall thicknesses, systolic and diastolic function of the ventricles, pulmonary hypertension at every 6 months.

**Results.** Echocardiographic alterations were present in 63 patients. In MPS, all patients had echocardiographic changes: valves thickening with variable grades of regurgitation or stenosis (in all patients), left ventricle hypertrophy (13 patients), patent ductus arteriosus (1 patient). Thirty-four patients with Gaucher diseases presented echocardiographic changes: mitral regurgitation (24 patients), aortic regurgitation (11 patients), pulmonary hypertension (18 patients), dilated cardiomyopathy (1 patient), atrial septal defect (1 patient). Hypertrophic cardiomyopathy was detected in one patient with Fabry disease and dilated cardiomyopathy was detected in 3 patients with gangliosidosis and in one patient with Pompe disease.

**Conclusions.** Cardiac involvement was present in 59% of patients with lysosomal storage diseases.

**Keywords:** lysosomal storage disease cardiac echocardiography

## PSYCHOLOGICAL ISSUES OF PATIENTS WITH ICD

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**Objectives.** Implantable cardioverter defibrillators (ICDs) are used as a therapy for patients that are at high risk for developing or have survived a life threatening cardiac arrhythmia [1]. Patients receiving ICD therapy may show reduced quality of life, subjective health status and diminished social functioning. Anxiety and fear are very common in case of ICD discharge and frequently influence the behavior of the patient [2]. It is well known that fear and anxiety may trigger arrhythmia, which may increase mortality even in the presence of ICD [3]. The aim of this presentation it is a review of the psychosocial impact, and psychological intervention in patients with ICD.

**Keywords:** ICD, anxiety, arrhythmia

## HOW TO FIX A BROKEN HEART: VENTRICULAR SEPTUM RUPTURE REPAIR - CASE REPORT AND LITERATURE REVIEW

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**Objectives.** This presentation aims to illustrate the complex clinical and surgical challenges behind a major complication of acute myocardial infarction, the ventricular septum rupture. We described the single bovine pericardium patch exclusion technique through a posterior left ventriculotomy. Lastly, we review the literature for further insight into the optimal approach of this complication.

**Materials and methods.** We report the case of a 44 year old male patient who presented acute left and right ventricular failure on the third day after an acute myocardial infarction produced by an occlusion of the right coronary artery which was originally managed percutaneously (dilation and stenting). Transthoracic echocardiography revealed an inferior ventricular septal rupture resulting in a hemodynamically significant shunt. Intraaortic balloon pump circulatory support was implemented but the patient's status worsened over the next few hours and surgical management was required. A posterior longitudinal left ventriculotomy, parallel to the septum revealed an inferior rupture of the septum, extending 5-6 cm in length, respecting the mitral subvalvular apparatus. A single large bovine pericardial patch was sutured inside the left ventricle, sealing off the rupture, aiming at shunt closure and preservation of left ventricular geometry with minimal impact on diastolic inflow and ventricular loading; double layer ventriculorrhaphy reinforced by teflon felt strips was performed without residual bleeding. The patient was weaned off cardiopulmonary bypass without incidents, but shortly after arriving into the intensive care unit significant bleeding prompted immediate re-sternotomy for hemostasis control.

**Results.** Postoperatively the patient steadily improved hemodynamically, with minor instability during an overlapping septic episode that resolved under antibiotic therapy. The patient presented transient neurological deficits that resolved following physical rehabilitation, with discharge at 28 days postoperatively.

**Conclusions.** Developments in cardiovascular medicine have significantly lowered the incidence of ventricular septal ruptures. However, low rates result in lack of operative experience thus making way for a discussion regarding optimal diagnostic, perioperative and intraoperative management. To this end we present a brief literature review.

**Keywords:** ventricular septal rupture, myocardial infarction, case reports, review

## THE ROLE OF MULTILAYER STENTS IN THE TREATMENT OF AORTIC DISSECTION: A SINGLE-CENTER EXPERIENCE MULTILAYER FLOW MODULATOR STENTS IN AORTIC DISSECTION

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**Objectives.** Reported are up to 36-month outcomes of patients with type B aortic dissection managed by multilayer stents. We present our single center experience and results with this technique. Primary endpoint was freedom from rupture or dissection-related death at 18 months. Secondary endpoints were absence of major adverse events, absence of graft rupture or major side branches occlusion.

**Materials and methods.** Patients with complex aortic dissections were selected for Multilayer Flow Modulator Stents (MFMS) endovascular repair and were followed prospectively. Computerized Fluid Dynamics (CFD) analysis for their CT-scans was performed at each follow-up.

**Results.** 15 patients with aortic dissection, underwent thoracic endovascular aortic repair (TEVAR) with a new generation multilayer aortic stents. Indications included: type B dissection (n=11), residual type B after type A surgical correction (n=3) and acute type B after surgical correction of a type A dissection requiring immediate intervention for a malperfusion syndrome (n=1). There were no reported ruptures or aortic-related deaths. Initial procedural success was 100% with no branch occlusions during follow-up. All patients are alive with the longest follow up of 36 months and an average follow-up of 18 month. Twelve-month freedom from neurologic events was 100%, and there were no incidences of end-organ ischemia, paraplegia or renal insult. Morphologic CFD analysis was performed with MIMICS that confirmed dissection remodeling by a reduction in false lumen volume and diameter.

**Conclusions.** MFMS are a safe option in the treatment of complex aortic dissections, with low mortality and good procedural success.

## HYBRID PROCEDURES IN THE MANAGEMENT OF AORTIC DISSECTION

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**Background.** Compared to open surgical treatment, isolated endoprosthesis (TEVAR) or hybrid approaches for thoracic aortic dissection with implication of the aortic arch became recently more and more common in current treatment protocols in many specialized centers.

These methods proved to have lower morbidity and mortality, with good short and long term outcome.

**Objectives.** To present these techniques and results in type B Stanford aortic dissection and persistent dissection of the thoracic descending aorta after surgical treatment of acute type A Stanford aortic dissection.

**Methods.** Between 2014-2018, 36 patients were diagnosed and treated for complex thoracic aorta disease, mainly type B Stanford aortic dissection (20 patients – 55.5%), 10 persistent false lumen after surgical treatment of acute type A aortic dissection (10 patients 27.7%) and thoracic aorta aneurysms (6 patients 16.6%). 34 of them were men (94, 4%) and 2 (5.5 %) were female with a mean age 54 yo (27 – 78 yo). Main cardiovascular risk factors were severe or

poorly controlled arterial hypertension and systemic atherosclerosis. After angio-CT evaluation scans, inadequate landing proximal zone indicated the need for surgical revascularization of one or more aortic arch vessels in 12 patients (33.3%) prior to endovascular repair. Aortic arch vessels were bypassed in a surgical operating room, followed by the endovascular procedures in a cath lab. Occasionally the by-pass procedure was performed in the cath-lab after the decision to cover both the left common carotid and left subclavian artery with the EVG. The EVG used are: Medtronic Valiant in 6 cases, Evita Open – Jotec in 30.

**Results.** The technical success was achieved in all cases. No deaths occurred so far in-hospital or at 30-day follow-up. No endoprosthesis migration was noticed in those patients in which CT was performed. There were 4 cervical hematomas with no special treatment (11.1%) of those with debranching. Five (13.8%) patients required CSF drainage (one with total coverage of the descending thoracic aorta from the left common carotid to the celiac trunk).

There were no neurological complications (paraplegia, stroke), no acute renal failure, no infection and no need for surgical conversion.

The longest follow up is 4.5 years and all treated patients are alive.

**Conclusion.** Hybrid procedures are a safe option in the treatment of aortic type B dissections different etiology and persistent dissection of the thoracic descending aorta after surgical treatment of acute type A aortic dissection with low mortality and good procedural success. Further studies and longer follow-up are needed to establish the role of this complex procedures in the management of aortic dissection.

**Keywords:** type A aortic dissection, type B aortic dissection, endovascular stentgraft implantation (TEVAR), hybride procedures, aortic debranching

## LONG-TERM THERAPEUTIC RESULTS AFTER SURGICALLY TREATED INFECTIVE ENDOCARDITIS IN THE CLUJ-NAPOCA CARDIOVASCULAR SURGERY CLINIC

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**Objectives.** This study analyses the impact of surgery for infective endocarditis (IE) and its effects on the long-term prognosis.

**Materials and methods.** A total number of 218 patients were operated for IE in our service during a ten-year period (between January 1st, 2008 and September 30th, 2017). The medical records of all patients were retrospectively reviewed for the demographic data, co-morbidities, and risk factors. Before the operation, lesion extension was assessed by echocardiography (trans-thoracic and/or trans-esophageal), and secondary systemic lesions were evaluated by CT-angiography. The main indications for surgery were progressive congestive heart failure, untreatable sepsis, peripheral or central emboli, and echocardiographic evidence of large, friable vegetation -progressive congestive heart failure. In the last five years, the indication for emergency operation was established according to the latest European Society of Cardiology (ESC) guidelines. All reachable patients who agreed to participate in this study were clinically and echocardiographically assessed for a minimum of 6-months period after intervention.

**Results.** Patients' age ranged between 11 and 84 years, with an average of  $55.4 \pm 14.3$  (SD) years. Early post-operative mortality was 11%, and we tried to identify the independent predictors for it among the risk factors. In the group of patients who survived the first 30 days after intervention and agreed to participate in the study (N =169), long-term (minimum 6 months) survival was 95.3%. We also analyzed the independent predictors of survival.

**Conclusions.** Early (emergency or urgency) surgery for IE provides a good chance for a cure and a satisfactory long-term survival. The advances in pre- and post-operative management of IE patients, as well as in surgical techniques and prosthetic valves seem to further improve the long-term results.

**Keywords:** infective endocarditis, early postoperative mortality, long-term survival

## COMPLEX MITRAL VALVE REPAIR: EXPERIENCE OF THE CARDIOVASCULAR SURGERY CLINIC, NICOLAE STÂNCIOIU HEART INSTITUTE, CLUJ-NAPOCA

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**Objectives.** Mitral valve repair is currently recommended as a primary surgical approach, particularly in specific etiologies. The results are durable generally and accepted to be superior to mitral replacement with regard to left ventricular function and patient outcome. We have conducted a retrospective study in order to assess our experience with this approach.

**Materials and methods.** Patients who underwent complex mitral valve repair (ring annuloplasty associated with valvular, subvalvular or chordal techniques) between January 2000 and April 2018 were included. Clinical characteristics such as age, gender, etiology of the disease and concomitant anomalies, were analyzed. Also, the surgical strategies, intraoperative results, the outcome and postoperative complications were evaluated.

**Results.** 194 patients were identified, 26 -75 age range (mean – 56 years), 71% (n=138) men. The most common etiology was degenerative disease; majority had significant mitral regurgitation. Ring annuloplasty was performed in all 194 patients, 118 of them underwent posterior leaflet repair procedures, 30 anterior leaflet repair, whereas 19 patients required both anterior and posterior leaflet repair; the rest underwent subvalvular or chordal techniques. Concurrent procedures for 45 patients were performed, most common being: CABG (n=22), tricuspid annuloplasty (n=10), closure of patent foramen ovale (n=6) and aortic valve replacement (n=3). Postoperative results were good, majority of the patients having absent or minimal regurgitation. Using TEE, 2 cases were diagnosed with significant intraoperative regurgitation - valve replacement and repeated repair were performed with good results. One patient required mitral valve re-operation 12 years later. Important complications that occurred: arrhythmias (n=5), stroke (n=3), myocardial infarction (n=1), bacterial endocarditis (n=1) and annuloplasty ring dehiscence (n=1). Mortality was 2% (n=4).

**Conclusions.** According to our experience complex mitral valve repair offers good short-term outcome with good long-term stability of the repair, yielding low operative risk and low mortality rates. Our results confirm that mitral valve repair is the gold standard of surgical management for degenerative mitral disease.

**Keywords:** mitral valve repair, mitral regurgitation, ring annuloplasty, degenerative mitral valve disease

## NO REFLOW PHENOMENON AFTER PCI IN A YOUNG PATIENT WITH STEMI – CASE REPORT

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**Objectives.** No reflow phenomenon is the failure of blood to reperfuse an ischemic area despite a fully patent coronary artery after PCI. When it does occur, it significantly attenuates the beneficial effect of reperfusion therapy, leading to poor outcomes.

**Materials and methods.** Patient T.H, 28y/o, with no medical history, presented at the Emergency Unit complaining of severe posterior thoracic pain radiating to the spine and left arm. His family medical history revealed his mother's death hence a cardiac rupture after STEMI; also, his father suffered a stroke. The patient used to be a smoker with a pack-year index of 11 but denied toxics intake. The physical examination showed a heart rate of 75 bpm, a blood pressure of 150/90 mmHg and SpO<sub>2</sub> 99%. The serology revealed that the patient was dyslipidemic and had raised cTnI with 1.51 ng/ml. The echocardiography examination showed a non-dilated left ventricle with moderate systolic dysfunction (ejection fraction 40%), apical aneurysm, septal hypokinesis but no valve regurgitation. The coronary angiography revealed obstruction of the left anterior descending artery therefore a Xience Xpedition stent (DES) was implanted. The final result was suboptimal with a TIMI 0-1 flow and a MGB of 1. The ECG after coronarography showed sinus rhythm, a heart rate of 85 bpm, QRS axis of + 30 degrees, ventricular bigeminy, couplets, ventricular extrasystoles and a 2 mm ST segment elevation in V2-V3. Four days after PCI, the ECG revealed sinus rhythm, a heart rate of 75 bpm, QRS axis of + 45 degrees but also a 1 mm ST segment elevation in V2-V3 and an 0.5 mm ST segment elevation in V4.

**Conclusions.** Not only the TIMI 0-1 flow and the MGB of 1 after PCI, but also the sustained ST segment elevation (over 50%) after coronary reperfusion strongly suggest the no reflow phenomenon; therefore the patient needs a vigilant follow-up in order to avoid further complications. This case particularity consists in the early onset of the disease discovered in a young dyslipidemic male with no cardiovascular medical history, but who was a smoker and had a significant family history of cardiovascular disease.

**Keywords:** no reflow phenomenon, STEMI, TIMI, PCI

## THE CHARACTERISTICS OF PULSE WAVE VELOCITY IN HEALTHY TEENAGERS AND YOUNG ADULTS

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**Objectives.** The purpose of this study was to investigate the pulse wave velocity (PWV) in healthy teenagers and young adults in relation with age and gender, and to identify typical characteristics of PWV in these categories.

**Materials and methods.** We measured PWV on the carotid-femoral (c-f PWV) and carotid-radial (c-r PWV) segments in 148 healthy teenagers and young adults (78 boys and 70 girls). We performed univariate analysis and multiple linear regressions for evaluating correlations between PWV and different independent variables in these categories.

**Results.** Both c-f PWV and c-r PWV progressively increase with age in both genders, with low variations in relation with age and sex. In both genders, age, height, weight and systolic arterial blood pressure had significant and positive correlations ( $p < 0.05$ ) with c-f PWV and c-r PWV. Using multivariate analysis, age was identified as the only independent determinant of PWV on both segments, in both genders ( $p < 0.001$ ).

**Conclusions.** Based on our data, we affirm that c-f PWV and c-r PWV are largely influenced by age in case of healthy teenagers and young adults. We were not able to demonstrate statistically the influence of other variables on PWV.

**Keywords:** pulse wave velocity, healthy teenagers and young adults, arterial rigidity, endothelial dysfunction

## LEFT VENTRICULAR DIASTOLIC PERFORMANCE IN PATIENTS WITH MALIGNANT LYMPHOMAS TREATED WITH ANTINEOPLASTIC DRUGS

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**Objectives.** Antineoplastic drugs confer an increased risk of left ventricular dysfunction. We evaluated the left ventricular diastolic performance in patients with malignant lymphomas treated with chemotherapy, using Doppler echocardiography.

**Materials and methods.** In this prospective study, 22 patients with malignant lymphomas treated with adriamycine containing chemotherapy (CHOP and ABVD) -study group-, and a gender- and age-matched group of 22 patients diagnosed with tumors, who had not started treatment yet (control group), were assessed by echocardiography. We assessed the left ventricular diastolic function by measuring the Doppler transmitral flow: the maximal velocity of the E wave (rapid filling) and A wave (atrial filling), the ratio of Emax/Amax, the pressure half time (PHT) of the E wave and the isovolumic relaxation time (IVRT). We measured the global left ventricular ejection fraction (EF) in order to determine the left ventricular systolic performance.

**Results.** We documented an alteration of the left ventricular diastolic performance in our study group by finding out a significant decrease ( $p<0.001$ ) of Emax, whereas the A wave was significantly increased, compared to the control group ( $p<0.001$ ). As a consequence, the mitral E/A ratio became subunitary in the study group. We also documented a prolonged PHT of the E wave in the chemotherapy-treated group in comparison to the control group ( $p<0.001$ ) and also a longer IVRT in the study group compared to the control group ( $p<0.001$ ). We documented no significant alteration of the left ventricular systolic performance in the study group compared to the control group.

**Conclusions.** In the present echo – Doppler study we documented an impaired left ventricular diastolic performance in patients with malignant lymphomas treated with adriamycin containing chemotherapy (CHOP, ABVD), impairment due to poor left ventricular compliance.

**Keywords:** adriamycine containing chemotherapy, Doppler echocardiography, left ventricular diastolic performance

## LARGE LEFT ATRIAL MYXOMA –AN UNEXPECTED CAUSE OF TRANSIENT ISCHEMIC ATTACK

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**Objectives.** Background: Atrial myxomas, the most frequent primary cardiac tumors, may present with a nonspecific clinical picture, that may comprise constitutional symptoms, obstructive symptoms and embolic phenomena, thus delaying the diagnosis. Echocardiography is the main diagnostic tool in identifying and describing cardiac masses.

**Case report.** We report the case of a 67-year-old female with no cardiovascular history, who presented with

transient left hemiparesthesia. The physical exam was unremarkable, except for a “tumoral plop” at heart auscultation. The electrocardiogram showed sinus tachycardia, 95 bpm, left ventricular hypertrophy, normal PR and cQT intervals, no ischemic changes.

**Results.** Transthoracic echocardiogram completed by transesophageal exam revealed a nondilated, efficient left ventricle, large left atrial non-homogenous mass, with an area of 9.2 cm<sup>2</sup>, with a low base of attachment to the interatrial septum, protruding in diastole through the mitral valve, small pericardial effusion. Coronary angiogram showed coronary atheromatosis with no significant stenosis. The patient was promptly referred for surgery, with the excision of the left atrial tumor, which was confirmed histopathologically to be a myxoma. Postoperative course was uncomplicated, except for an episode of atrial fibrillation.

**Conclusions.** Atrial myxomas may present with nonspecific symptoms, thus delaying the diagnosis. The particularity of this case is that, despite the size of the tumor and its prolapsing through the mitral valve, the patient did not report dyspnea, pulmonary edema or fatigue. Embolization to the central nervous system may result in a neurological presentation such as in this case. Echocardiography provides a noninvasive method of diagnosis, with transesophageal echography being more informative, both for identifying the presence of the cardiac mass and of its obstructive consequences and embolic risk. Once diagnosed, prompt resection is mandated due to the risk of embolization and cardiovascular complication, including sudden death. Prognosis is usually very good, with a low mortality rate (<5%) and a rapid recovery; in up to 26% of patients arrhythmias or atrioventricular conduction abnormalities may occur. Recurrence of myxoma or the development of additional sites was reported in 5% of patients.

**Keywords:** myxoma, left atrium, ischemic attack, transient

## CATHETER ABLATION OF PREMATURE VENTRICULAR CONTRACTIONS WITH AN ATYPICAL ORIGIN

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**Objectives.** Ventricular tachycardia (VT) is generally associated with structural heart disease. Idiopathic VT is a distinct entity whose management and prognosis differ from VT in patients with structural heart disease. Taking into consideration the limited efficacy of antiarrhythmic agents in terminating the arrhythmia, radiofrequency (RF) catheter ablation has been the method of choice in these cases, due to its high success rate and low recurrence rate. The aortic valve origin of the VT is quite rare and is associated with an increased risk of intraprocedural complications. We present the case of a 60-year-old patient with frequent premature ventricular contractions (PVC), non-sustained episodes of VT, poor antiarrhythmic treatment response and no signs of structural heart disease, who underwent a RF ablation procedure at the Rehabilitation Hospital in Cluj-Napoca.

**Materials and methods.** The procedure was guided by the 3D mapping system NavX (St. Jude Medical). The PVC morphology on the surface ECG suggested the origin of the arrhythmia on the left coronary cusp (LCC) of the aortic valve. Therefore, the anatomical and activation maps were performed in the left ventricular outflow tract (LVOT) by retrograde transaortic approach. The mapping of the LVOT revealed early activation of a site located on the LCC of the aortic valve.

**Results.** The activation map, constructed with the help of bipolar electrograms, pinpointed the VT's origin on the LCC of the aortic valve. The application of RF energy at this specific site resulted in the suppression of the PVCs. No intraoperative or postprocedural complications were noted. A 24h Holter-ECG Monitoring was performed after the procedure, which revealed a few PVCs, though with a different morphology than the initial ones, suggesting a different origin.

**Conclusions.** RF ablation, guided by a 3D mapping system is highly effective in managing drug-resistant idiopathic VT and PVCs. The PVCs originating from the aortic valve are associated with an increased risk of intraprocedural complications which can be avoided by undertaking several protective measures.

**Keywords:** PVC, catheter ablation

## WHAT GOES WHERE? A RARE CASE OF VASCULAR MALFORMATION COMBINED WITH SCIMITAR SYNDROME

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**Objectives.** This complex arterial-venous malformation consists in an abnormal aorto-cava connection, communicating with an anomalous partial pulmonary venous return. This creates a rare type of aorto-cava fistula associated with Scimitar Syndrome. The respiratory and hemodynamic consequences are due to retrograde increase of pressure from the aorta into the cava system, but the symptomatology is nonspecific.

**Materials and methods.** A 2 months patient delivered via C-section within a twin pregnancy at 36 weeks, with an APGAR score of 8/1 was diagnosed with a connection between the aorta and the inferior vena cava, atrial septal defect and a patent ductus arteriosus. She is referred for investigations and surgical treatment to IUBCVT in Targu Mures presenting acute respiratory distress. The echocardiography showed dilatation of the right cavities, decreased cardiac function, ostium secundum atrial septal defect, patent ductus arteriosus and severe pulmonary hypertension. The CT scan with contrast highlighted a pulmonary vein draining the latero-basal and the postero-basal right inferior lobe of the lung. It crosses the diaphragm becoming retrohepatic in contact with the inferior vena cava and then it connect with another pulmonary vein draining the medio-basal right inferior lobe of the lung. This vascular structure with a diameter of 8 mm connects with the aorta suggestive for a systemic-pulmonary arteriovenous fistula, a partial pulmonary venous return and pulmonary sequestration. The cardiac catheterization showed a significant collateral emerging from the abdominal aorta which divides in 2 branches, one communicating with the inferior vena cava and with a region of the right lung with signs of pulmonary edema.

**Results.** The peritoneal cavity is opened through a bilateral Kocher incision and the intestines are mobilized. Exploring the cavity at the level of the diaphragmatic pillars, an 8 mm structure can be identified, emerging from the abdominal aorta which follows an ascending path through the supramezocolic region into the right thorax. The malformation is ligated with 2 stiches at the origin from the abdominal aorta. Postoperative the status improved with the remission of the functional respiratory distress and abdominal symptomatology. However, after 1 month the clinical status deteriorates, and the new CT scan shows flow at the same level of the fistula, demanding further investigation and a surgical plan for treatment.

**Conclusions.** To solve this pathology a multidisciplinary team was needed, and the treatment decision was taken during surgery after a carful inspection of the malformation.

**Keywords:** aorto-cava fistula, anomalous pulmonary venous return, Scimitar Syndrome

## INFLAMMATION, AN IMPORTANT DETERMINANT OF HEART DISEASE, IN AN ONCOLOGICAL CONTEXT

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**Objectives.** Cardiovascular diseases and cancer share common risk factors including inflammation. Inflammation triggers mutagenesis and contributes to cancer pathophysiology but also is involved in cardiac diseases. Chronic systemic inflammation can lead to atherosclerosis that can produce coronary artery disease (CAD), infarction, cardiomyopathies.

**Materials and methods.** This is a literature review regarding inflammation in oncological patients and its role in development of cardio-vascular suffering.

**Results.** Due to the aging of the populations of developed countries and a common occurrence of risk factors, it is increasingly probable that a patient may have both cancer and cardiovascular disease. There is a functional relationship between inflammation and cancer and also cardio-vascular disease. Cytotoxic agents and targeted therapies used to treat cancer affect the cardiovascular system. Accordingly, more sensitive and reproducible biomarkers predictive of cardiac toxicity should be included in routine monitoring to allow early detection, prevention, prompt treatment and ultimately optimal recovery. Today's oncologists must be fully aware of cardiovascular risks to avoid or prevent adverse cardiovascular effects, and cardiologists must now be ready to assist oncologists by performing evaluations relevant to the choice of therapy.

**Conclusions.** As the overall survival of patients with cancer continues to rise, more cancer survivors are faced with the risk of developing cardiovascular toxicities. Both cancer and CVD are characterized by a pro-inflammatory state, which can increase the risks of further cardiovascular decline. Identification of those patients at higher risk will be one key strategy to reduce the morbidity and mortality from cardiotoxicity. This review has highlighted the increasing importance of CVD management in cancer patients among the disciplines of oncology, cardiology, and primary care.

**Keywords:** cardiotoxicity, cancer, chemotherapy, inflammation