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Research Article **Published Date:-2017-12-06 00:00:00**

[Numerical Simulation of Thrombotic Occlusion in Tortuous Arterioles](#)

Tortuous microvessels alter blood flow and stimulate thrombosis but the physical mechanisms are poorly understood. Both tortuous microvessels and abnormally large platelets are seen in diabetic patients. Thus, the objective of this study was to determine the physical effects of arteriole tortuosity and platelet size on the microscale processes of thrombotic occlusion in microvessels. A new lattice-Boltzmann method-based discrete element model was developed to simulate the fluid flow field with fluid-platelet coupling, platelet interactions, thrombus formation, and thrombotic occlusion in tortuous arterioles. Our results show that vessel tortuosity creates high shear stress zones that activate platelets and stimulate thrombus formation. The growth rate depends on the level of tortuosity and the pressure and flow boundary conditions. Once thrombi began to form, platelet collisions with thrombi and subsequent activations were more important than tortuosity level. Thrombus growth narrowed the channel and reduced the flow rate. Larger platelet size leads to quicker decrease of flow rate due to larger thrombi that occluded the arteriole. This study elucidated the important roles that tortuosity and platelet size play in thrombus formation and occlusion in arterioles.

Mini Review **Published Date:-2017-11-23 00:00:00**

[Lipid-induced cardiovascular diseases](#)

Cardiovascular diseases are the leading cause of death worldwide. There are many evidences that the dysfunctioning lipotoxicity is the one of major factors of cardiovascular diseases such as, atherosclerosis, hypertension, and coronary heart disease. Obesity and diabetes increase circulating lipids that are likely with more generation of toxic intermediates, which leading to the complications associated with cardiovascular diseases. Indeed, lipotoxicity is a metabolic syndrome caused by abnormal lipid accumulation, which leads to cellular dysfunction and necrosis. Here we review the factors that induced pathogenesis of cardiovascular diseases by lipid accumulation and the mechanisms underlying the lipotoxicity.

Research Article **Published Date:-2017-09-20 00:00:00**

[Non-hemodynamic factors associated to the risk of developing hypertensive cardiopathy](#)



Introduction: Hypertensive cardiopathy is the target organ lesion caused by arterial hypertension (HTN) that exhibits the highest morbidity and mortality rates. Although the importance of hemodynamic overload exerted by HTN on the onset of cardiopathy is well established, several non-hemodynamic factors may contribute significantly to its development.

Objective: To evaluate the influence of different non-hemodynamic risk factors in the development of hypertensive cardiopathy.

Methods: A prospective cohort study was carried out in hypertensive patients assisted at the specialized arterial hypertension physicians' office of the "Carlos Manuel de Céspedes" Specialty Policlinic attached to the General University Hospital, Bayamo Municipality, Granma Province, Cuba from January 5, 2006 to December 31, 2015. The study included 18-to-55-year-old hypertensive patients with a stage 1 arterial hypertension diagnosis for less than a year¹.

Results: The multivariate analysis showed a significant and independent relation among the majority of the factors studied and the risk of developing cardiopathy. The major factor was C-reactive protein (HR: 5.020; IC 95%: 3.383-7,448; $p < 0.005$) followed by microalbuminuria (HR: 2.649; IC 95%: 1.932-3.631; $p < 0.005$). The area under the model ROC curve was 0.887 ($p < 0.005$).

Conclusions: The results showed that it is possible to estimate the risk of developing hypertensive cardiopathy with the application of the regression model to major risk factors.

Case Report **Published Date:-2017-09-15 00:00:00**

[A new heart: portraying the physiologic anatomo-functional reconstruction in ischemic cardiomyopathy](#)

Fiber-based model of the left ventricle is known since 1628 but the complex 3D structure of myocardial fibers has not taken into account in normalcy or in disease until the last decade. We here present the case of a 60-year-old female patient affected by ischemic cardiomyopathy and severe left ventricular dysfunction. Left ventricle was reconstructed according to a novel surgical technique aimed at rebuilding an elliptical ventricular chamber and redirecting myocardial bundles of fibers in a near-normal orientation, by means of an original suturing technique. Left ventricular torsion was restored, proving the reorientation of myocardial fibres' bundles. The restored physiologic shape was maintained along the years, gradually improving global ejection fraction and diastolic indices, showing a positive remodeling induced by the optimised geometrical and functional parameters.

The unexpected and never proven before renewal of ventricular torsion is an adjunctive element of ventricular efficiency, mainly in ventricles that work at a critical mechanics. A new fiber-based reading of heart function could improve clinical and functional outcomes and address some unsolved issues in the surgical treatment of ischemic cardiomyopathy as well as in medical approaches to the diseased myocardium.

Research Article **Published Date:-2017-08-18 00:00:00**

[Value of electrocardiographic T wave inversion in lead aVL in prediction of Mid Left Anterior Descending Stenosis in patients with stable Coronary Artery disease](#)

Background: The electrocardiogram (ECG) is a simple and noninvasive bedside diagnostic tool with a well-established role in the diagnosis of coronary artery disease (CAD). We aimed to study the diagnostic value of electrocardiographic ST-T wave changes in lead aVL in prediction of site of coronary artery stenosis in patients with chronic stable angina.

Patients and Methods: study was conducted on 156 patients referred for invasive coronary angiography with history of stable CAD as proved by non- invasive tests, 12 lead ECG was recorded and fully interpreted with more focus on T wave direction in aVL lead. T waves in aVL were categorized into one of three groups: upright, flat or inverted.

Results: regarding T wave in lead aVL, inverted T wave was reported in 71(45.5%) patients, 58 (37.2%) patients were with upright T wave in lead aVL and 27(17.3%) patients were with flat T wave in lead aVL, and we found that inverted T wave in lead aVL was most evident in 56(73.7%) patients with mid LAD with (highest ? value equal to 0.550[moderate agreement], and p value<0.001.

Conclusions: This study confirmed the diagnostic value of T wave inversion in lead aVL in prediction of mid left anterior descending artery lesions in patients with stable coronary artery disease.

Case Report **Published Date:-2017-08-17 00:00:00**

[Subacute infectious endocarditis-associated membranoproliferative glomerular nephritis: A Case Report and Review](#)

We experienced a case of membranoproliferative glomerulonephritis (MPGN) caused by subacute infectious endocarditis (SIE). A 57-year-old male farmer complained of fatigue, lack of appetite and gross haematuria for a month; he had no cough, chest pain, or exertion dyspnea. After admission, lab tests showed mild proteinuria(1.04g/d) and heavy dysmorphic red blood cells(RBC) (543/HP), with serum creatinine(Scr) slightly elevated(1.46mg/dl) and anemia(hemoglobin Hb 85g/L). A renal biopsy revealed MPGN lesion with 16.6% cellular crescents. The echocardiogram test revealed mitral valve prolapse with perforation of the anterior lobe, vegetation, and severe regurgitation. He was diagnosed as SIE induced MPGN. Then he underwent mitral valve replacement after systemic antibiotic treatment without immunosuppressive agents. Follow-up showed that he dramatically regained normal kidney function in total 1 year after the operation. Thus, antibiotic administration and valve replacement may be efficient enough for some of SIE induced MPGN. We did a brief review of the literature on SIE induced MPGN, which was sometimes misdiagnosed due to its silent characteristics; some SIE patients may initially have other organs involved.

Research Article **Published Date:-2017-07-07 01:00:00**

[A rare Congenital Coronary Artery Anomaly: Woven Right Coronary Artery associated with Myocardial Infarction](#)

Woven coronary artery (WCA) is an extremely rare and still not a clearly defined coronary anomaly. It is characterized by the division of epicardial coronary artery into thin channels which then reanastomose with the distal part of the abnormal coronary artery [1]. Since the angiographic imaging of WCA looks like an intracoronary thrombus and dissection; the differential diagnosis between atherothrombotic coronary arteries with recanalization of organized thrombi in coronary arteries and WCA may be very difficult for invasive cardiologists, especially in patients with single or two coronary artery involvements [2].

Research Article **Published Date:-2017-07-07 00:00:00**

[Investigation of Retinal Microvascular Findings in patients with Coronary Artery Disease](#)

Objectives: Retinal microvascular anomalies may be a marker for cardiovascular diseases. Our aim in this study was to investigate the utility of ocular fundoscopic examination as a noninvasive method in specifying the patients who carry a risk for coronary artery disease.

Material and Method: Patients who were diagnosed with coronary artery disease by coronary angiography were included in our study. Bilateral fundoscopic examination was performed in these patients. Fundoscopic findings and risk factors for coronary artery disease were evaluated.

Results: This study enrolled 100 patients (male: 72 (72%), mean age: 58.25 ± 7.1) who were diagnosed with coronary artery disease by coronary angiography. Upon fundoscopic examination, 87% of the study population had atherosclerotic changes. Grade I atherosclerosis was found in 54% of the patients, grade II atherosclerosis was found in 32% of the patients and grade III atherosclerosis was found in 1% of the patients. Increased retinal tortuosity was present in 65% of the patients. Hollenhorst plaque was observed in 3 patients. Drusenoid bodies were observed with a statistically significantly higher rate in the patients who were not using clopidogrel compared to the patients who were using clopidogrel ($p < 0.001$).

Conclusions: Retinal findings are frequently found in patients with coronary artery disease. Therefore, fundoscopic examination is a noninvasive and feasible examination method which can be frequently used in the evaluation of cardiac functions.

Mini Review Published Date:-2017-06-29 00:00:00

[Incidence of symptom-driven Coronary Angiographic procedures post-drug-eluting Balloon treatment of Coronary Artery drug-eluting stent in-stent Restenosis-does it matter?](#)

Objectives: The clinical impact of drug-eluting balloon (DEB) coronary intervention for drug-eluting in-stent restenosis (DES-ISR) is not fully known. To further evaluate this impact, we aimed to describe the incidence of symptom-driven coronary angiography (SDCA), an under-reported but potentially informative outcome metric in this cohort of patients. **Methods:** We retrospectively identified all patients ($n=28$) who had DEB-treated DES-ISR at University Hospital Limerick in between 2013-2015 and evaluated the incidence of subsequent SDCA as the primary endpoint. Data were expressed as mean \pm SD and %. **Results:** Baseline demographics demonstrate a mean age 63 ± 9 years with 61% of DEB-treated DES-ISR presenting with acute coronary syndrome. Mean number of ISR per patient and number of DEB per lesion was 1.2 ± 0.6 lesions and 1.2 ± 0.6 balloons, respectively. The incidence of SDCA was 54% after mean follow-up duration of 179 ± 241 days. 67.8% of patients had follow-up data beyond 12 months. Within the first year of follow-up, the incidence of SDCA with and without target lesion revascularization (TLR) was 11% and 36% respectively. Among patients with SDCA without TLR, 30% had an acute coronary syndrome not requiring percutaneous coronary intervention. **Conclusions:** A high incidence of SDCA was observed, particularly within the first 12 months after DEB-treated DES-ISR. This under-reported metric may represent a cohort at higher cardiovascular risk but requires further confirmation in larger studies.

Mini Review Published Date:-2017-06-23 00:00:00

[Thrombolysis, the only Optimally Rapid Reperfusion Treatment](#)

Thrombolysis with tissue plasminogen activator (tPA) has been plagued by inadequate efficacy and a high risk of intracranial hemorrhage (ICH), which led to its replacement by procedures like percutaneous coronary intervention (PCI) whenever possible. Since this requires hospitalization, it is time-consuming, and compromising salvage of brain tissue and myocardium. Thrombolysis is the only first-line treatment that can provide sufficiently timely treatment for optimal recovery of organ function. However, for this potential to be realized, its efficacy and safety must be significantly improved over the current method. By adopting the sequential, synergistic fibrinolytic paradigm of the endogenous system, already verified by a clinical trial, this becomes possible. The endogenous system's function is evidenced by the fibrinolytic product D-dimer that is invariably present in blood, and which increases >20-fold in the presence of thromboembolism. This system uses tPA to initiate lysis, which is then completed by the other fibrin-specific activator prourokinase (proUK). Since tPA and proUK in combination are synergistic in fibrinolysis, it helps explain their efficacy at their low endogenous concentrations.

Case Report Published Date:-2017-06-21 00:00:00

Coronary artery aneurysm is commonly defined as a localized dilatation exceeding the diameter of adjacent normal coronary segments by 50% [1]. Coronary artery aneurysms may be fusiform, involving the full circumference of the coronary artery, or saccular, involving only a portion of the circumference [2]. Causes of coronary artery aneurysms include atherosclerosis (accounting for 50% of cases), Kawasaki disease, polyarteritis nodosa, infection, trauma, coronary dissection, percutaneous coronary angioplasty, and congenital malformations [3]. The abnormal blood flow within the coronary artery aneurysm may lead to thrombus formation, embolization, rupture, myocardial ischemia or myocardial infarction [4]. Here we present a case of a giant fusiform coronary artery aneurysm who passed away due to coronary rupture after acute myocardial infarction.

Research Article

Published Date:-2017-05-19 00:00:00

[Procedure utilization, latency and mortality: Weekend versus Weekday admission for Myocardial Infarction](#)

Background: Due to variations in hospital protocols and personnel availability, individuals with myocardial infarction admitted on the weekend may be less likely to receive invasive procedures, or may receive them with a greater latency than those admitted during the week. Whether or not this occurs, and translates into a difference in outcomes is not established.

Method: Using the Nationwide Inpatient Sample (2008-2011) database, we identified all patients admitted with a principle diagnosis of acute myocardial infarction. They were stratified by weekend or weekday admission. Baseline clinical characteristics, procedure utilization and latency to procedure were compared, and logistic regression models were constructed to assess the relationship between these variables and in-hospital mortality.

Results: Patient demographics and provider-related characteristics (hospital type, geography) were similar between weekend and weekday admission for myocardial infarction. Adjusted for covariates, we found that the odds of mortality for a weekend admission are 5% greater than for a weekday admission (OR: 1.05; 95% CI: 1.01, 1.09, $p=0.009$). For the utilization of an invasive procedure, we found that the odds of receiving a procedure for a weekend admission were 12% less than the odds for a weekday admission, adjusted for the other covariates (OR: 0.88; 95% CI: 0.86, 0.91, $p<0.001$). In addition, we found that the time to procedure was an average of 0.18 days (4.32 hours) longer for weekend admissions compared to weekday admissions (95% CI: 0.16, 0.20, $p<0.001$). However, we did not observe a significant difference in the overall length of stay for weekend and weekday admissions (0.004 days; 95% CI: -0.04, 0.05, $p=0.87$).

Conclusion: In a large and diverse subset of patients admitted with myocardial infarction, weekend admission was associated with fewer procedures, increased latency to those procedures, and a non-significant trend towards greater in adjusted in-hospital mortality.

Case Report

Published Date:-2017-02-20 01:00:00

[Indications and Results of Coronarography in Senegalese Diabetic Patients: About 45 Cases](#)

Introduction: Coronary disease accounts for 75% of diabetic mortality. Coronary angiography reveals lesions that are often diffuse, staggered and multi-truncated. The objective of this study was to determine the indications and results of coronary angiography in diabetic patients.

Method: This is a cross-sectional, descriptive and analytical study which took place from May 2013 to July 2015 at the cardiology clinic of the Aristide Le Dantec hospital. We have included all diabetics who have benefited from coronary angiography by studying clinical and paraclinical data, particularly coronary angiography ones.

Results: During this period, 400 patients had coronary angiography, including 45 diabetics, a hospital prevalence of 11.25%. The average age of our patients was 62.27 y/o with extremes of 44 and 85 y/o. The sex ratio was 1.6 in favor of men. Diabetes was revealed in 42 patients. Almost all patients were type II diabetics (44 patients) since 9.94 years in average. The associated cardiovascular risk factors were hypertension 66.7% and dyslipidemia 49.6%. Only 4 patients had typical chest pain. The electrocardiogram was abnormal in 84.4% of cases with 26 cases of SCA ST +. Coronary angiography was abnormal in 37 patients with significant stenosis in 30 patients. A single-truncular lesion was found in 14 cases, 8 had bi-truncular and other 8 had tri-truncular one. The anterior interventricular artery and the segment II of the right coronary were the most affected branches. Concerning the management, 14 patients had angioplasty with an active stent, 8 patients had medical treatment alone and 9 patients had coronary artery bypass surgery. Accidents occurred for 4 patients, two of whom had arterial spasm, one of a vagal discomfort and another had an occlusion of the circumflex that led to the implantation of a stent.

Conclusion: Diabetes is accompanied by progressive coronary atherosclerosis, which has an adverse effect on patients' prognosis. Tri-truncal affection and indications for coronary artery bypass surgery are common

Case Report

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[Short and Medium-Term Evaluation of Patients in Coronary Post-Angioplasty: Préliminary results at the Cardiology Department of the Hospital University Aristide Le Dantec of Dakar \(Senegal\): Study on 38 Cases](#)

Introduction: Coronary angioplasty is a safe therapeutic method for coronary disease. However, its major obstacles remain the occurrence of stent thrombosis (ST) and in-stent restenosis (ISR). The aim of this study was to evaluate the short-term and medium-term results of coronary angioplasty patients in the cardiology department of Aristide Le Dantec hospital in Dakar.

Methodology: It was a longitudinal, descriptive and analytical study over a period of 12 months (April 2014 to April 2015) with a follow-up at 6 months. Was included any patient who had a coronary angioplasty with stent placement.

Results: Thirty-eight patients had been included with a male predominance and a sex ratio of 5.32. The average age was 57.94 years. Cardiovascular risk factors were mainly smoking (57.9%) and coronary heredity (42.1%), followed by hypertension (39.5%) and diabetes (34.2%). The indications for angioplasty were acute coronary syndromes TS(+) and TS(-) respectively (50%) and (23.7%) and stable angina (26.3%). The right femoral approach was almost exclusive (97.4%). Coronary angiography revealed a predominance of anterior interventricular affection (84.2%). Type B lesions were the most frequent (68.4%). The single-truncular valve affection was predominant (76.3%). Direct stenting accounted for 63.2% of procedures. Twenty-one bare stents (55.3%) and 17 active stents (44.7%) were implanted. The results were excellent (94.7%). One case of acute stent thrombosis was noted. Echocardiography of dobutamine stress during follow-up was positive in 04 patients (12.5%). The control coronary angiography performed in two patients revealed an ISR. The predictive factors for restenosis were dominated by a deterioration in the segmental kinetics ($p=0.009$), in the diastolic function ($p=0.002$), the systolic function ($p=0.003$), a high post angioplasty troponin ($p=0.004$), the presence of calcifications ($p=0.004$) and a high SYNTAX score ($p=0.021$).

Conclusion: According to these results, Angioplasty is an effective therapy for coronary disease. However, a correct intake of double platelet antiaggregants and clinical and non-invasive screening are required for follow-up to avoid stent thrombosis or restenosis.

Case Report

Published Date:-2017-01-23 00:00:00

[Congenital Quadricuspid Aortic Valve, a Rare Cause of Aortic Insufficiency in Adults: Case Report](#)

Quadricuspid aortic valve (QAV) is rare congenital malformation of the aortic valve with estimated prevalence of 0.013% to 0.043% [1-4]. QAV is most commonly associated with aortic insufficiency (AI), which is found in almost 75% of cases [5]. QAV can also be associated with other cardiac defects such as ventricular or atrial septal defects, patent ductus arteriosus, subaortic fibromuscular stenosis, malformation of the mitral valve, and coronary anomalies [3]. Up to 40% of all patients with QAV undergo aortic valve replacement surgery most commonly due to progressive AI in 88% of case [2,3,6]. Here we report a case from our institution of a woman with QAV with severe AI and anomalous origin of the right coronary artery.

Case Report

Published Date:-2017-01-20 00:00:00

[Intermittent Left Bundle Branch Block: What is the Mechanism?](#)

A 73-year-old male underwent cardiologic evaluation for an incidental electrocardiographic finding of left bundle branch block (LBBB). He was asymptomatic and had no relevant cardiac history. Physical examination and transthoracic echocardiogram revealed no abnormalities.
