

**CARDIOVASCULAR COMORBIDITIES IN PATIENTS HOSPITALIZED FOR COVID-19 AND THEIR IMPACT ON PROGNOSIS IN THE TASC STUDY**

Afef Ben Halima¹, Hichem Aouina², Agnès Hamzaoui³, Leila Gharbi⁴, Nawel Chaouech³, Besma Dhahri⁵, Hédia Ghrairi⁶, Sarah Maazaoui², Imen Sahnoun⁴, Amani Ben Mansour⁴, Sabrine Louhichi³, Jihen Ben Amar².

1. Service de cardiologie, hôpital Abderrahman Mami Ariana
2. Service de pneumologie, hôpital Charles Nicolle
3. Service de pneumologie B, hôpital Abderrahman Mami Ariana
4. Service de pneumologie D, hôpital Abderrahman Mami Ariana
5. Service de pneumologie, hôpital la Rabta
6. Service de pneumologie, hôpital Nabeul

Introduction: The TASC study (Tunisian Anticoagulation Survey after hospital discharge in COVID-19 patient) is an observational, multicenter survey whose main objective is to assess the thromboembolic profile and the prescription of anticoagulant treatment in patients hospitalized for COVID 19.

Aim: Analysis of cardiovascular comorbidities in patients included in the TASC study and their impact on the prognosis.

Results: The study population included 301 patients hospitalized for COVID between December 2020 and February 2021. The average age was 62.4 ± 12.8 years with a sex ratio of 1.06. Ninety-eight percent of patients had at least one cardiovascular comorbidity. The distribution of cardiovascular comorbidities in the population was as follows: arterial hypertension in 129 patients (43%), ischemic heart disease in 26 patients (8.6%), atrial fibrillation in 19 patients (6.3%), heart failure in 14 patients (4.6%), stroke in 8 patients (2.6%), peripheral arterial disease in 4 patients (1.3%) and valvular heart disease in 1 patient.

Patients with at least one cardiovascular comorbidity had significantly more severe forms of covid 19 compared to patients without comorbidities (46% vs 16% $p < 0.05$). All deaths occurred in patients with cardiovascular co-morbidities

Conclusion: Cardiovascular comorbidities are common in hospitalized patients with COVID 19 dominated by hypertension and ischemic heart disease. Cardiovascular comorbidities have a pejorative impact on the prognosis of...

SHORT AND MEDIUM-TERM RESULTS OF CLOSURE OF THE VENTRICULAR SEPTAL DEFECT IN CHILDREN: CONVENTIONAL SURGERY VERSUS PERCUTANEOUS CLOSURE: ABOUT 289 CASES.

Lakehal Redha

Service de Chirurgie Cardiovasculaire, Algérie.

Introduction: VSD are common birth defects in children, accounting for 20 % of congenital heart disease diagnosed at birth. Untreated, they progress to serious complications.

Objectives: To compare the advantages, disadvantages, the feasibility, effectiveness and safety of percutaneous and surgical

closure procedures for the treatment of isolated VSD in child.

Methods: Prospective, multicentre, non-randomized study comparing both therapeutic methods of isolated VSD in children with a series of 289 children with isolated VSD and selected in the national and international cardiology and pediatric cardiac surgery departments between October 2018 and October 2020. The patients were divided into both groups. In group A, surgical closure was performed in 111 patients; in group B, 178 patients underwent percutaneous closure. The median age of the patients was 4.4 and 7.23 years, respectively and the body mass index was 14.92 and 17.54, respectively. The median diameter of VSD was 8.39 and 6.31 mm respectively (3-20 mm).

Results: 111 patients in group A and 178 patients in group B underwent successful closure with operative and postoperative mortality in the order of 1.8% and 0.56% respectively, clinical improvement in all our patients, 03 atrioventricular block in group A with absence of atrioventricular block in group B.

Conclusion: Both procedures are safe and effective for the treatment of isolated VSD. The percutaneous procedure has obvious advantages of a shorter stay.

EFFECT OF FIXED ASSOCIATION AMLODIPINE/ VALSARTAN ON CENTRAL BLOOD PRESSURE AND ARTERIAL STIFFNESS PARAMETERS IN HYPERTENSIVE PATIENTS

Emna Allouche, Habib Ben Ahmed, Mohamed Selmen Aissa, Marwa Fathi, Feten Boudiche, Hakim Ben Jemaa, Mohamed Béji, Wejdène Ouechtati, Leila Bezdah

Service de Cardiologie, Hôpital Charles Nicolle

Background: Central blood pressure is superior to office blood pressure measurements in predicting cardiovascular end organ damage.

We aimed to analyze the effect of single-pill combination (SPC) of Amlodipine and Valsartan on arterial stiffness and wave reflection parameters in hypertensive patients with uncontrolled hypertension on mono-therapy.

Methods: This prospective and observational study was conducted. Hypertensive patients under 70-year-old, receiving low dose mono-therapy longer than one month without achieving goal blood pressure, were started on a single pill combination (SPC) of Amlodipine and Valsartan. Four visits were programmed. Enrolled patients had peripheral (PBP) and central blood pressure (CBP) measurements at each visit. Pulse wave velocity (cf-PWV) was evaluated in all patients at baseline and was re-evaluated at 6 months in patients with diabetes and/or PWV ≥ 12 m/s.

Results: Of 248 eligible patients only 93 finished the study. After six months, there was a significant decrease in PSBP with -19,13 mmHg ($p < .00001$), and in CSBP with -16,42mm Hg ($p < .00001$). In patients with diabetes and/or PWV ≥ 12 m/s, initially, there was an improvement in arterial stiffness with a significant decrease in CSBP with -16,42 mmHg ($p < .00001$), in cf-WPV with -1,38m/s ($p < .00001$) and in Augmentation index (Aix) with -2,42% ($p < .00001$).

Conclusion: Therapy based on SPC of Valsartan/amlodipine was effective in providing extensive BP control (office and central BP).

PROGNOSIS FACTORS FOLLOWING IN-STENT RESTENOSIS TREATMENT

Mohamed Aymen Ben Abdesslem, Khalil Cheikh Sidiya, Ahmed Fekih Romdhane, Zied Ben Ameer, Hamza Mosrati, Fares Ammar, Hatem Bouraoui, Samia Hajri, Abdallah Mahdhaoui, Jeridi Gouider.

Service de Cardiologie/LR12SP09, Hôpital Farhat Hached Sousse

Introduction: In-stent restenosis (ISR) has always been an important issue. Many factors may affect the evolution of treated coronary ISR.

Aim : To determine independent factors associated with the occurrence of major adverse cardiac events (MACEs) following treated ISR.

Methods : All patients admitted to our department and treated for ISR, from January 2016 to December 2017 were included. They were followed up for a mean period of 36 months. Independent factors associated with the occurrence of MACEs during follow up were identified by multivariate logistic regression.

Results : A total of 116 patients were included. 41,1% were treated with DES, 23,3% with DEB and 8,6 % with POBA. 12,9% underwent CABG and 13,8% received MT only. During follow-up, 37,9% of patients had at least one MACE. The mean delay to the occurrence of the first MACE is 15 months. Independent risk factors identified with multivariate logistic regression were ISR of the proximal left anterior descending (LAD) artery (OR 1,29; [95% CI 1,16 – 1,91]; $p=0,05$), non-focal ISR (OR 2,16; [95% CI 1,10 – 3,47]; $p=0,022$), more than two stents from the first angioplasty (OR 1,89; [95% CI 1,14 – 2,21]; $p=0,031$), three-vessel coronary artery disease (OR 2,97; [95% CI 1,2 – 6,8]; $p=0,008$) and the absence of post-dilatation after ISR angioplasty (OR 1,32; [95% CI 1,0 – 1,35]; $p=0,04$).

Conclusion : Determining of these factors is important in order to improve ISR angioplasty outcomes.

ASSESSMENT OF QUALITY OF LIFE IN AF PATIENTS WITH AFEQT SCORE (A SINGLE-CENTER STUDY)

Khaoula Nasser, Aymen Elhraiech, Marouen Kacem, Mohamed Ali Tekaya, Ayoub Elmeddeb, Khaldoun Ben Hamda, Faouzi Maatouk

Service de cardiologie, Hôpital Fattouma Bourguiba Monastir

Introduction: Atrial fibrillation (AF) frequently impairs patients' quality of life (QoL). The QoL is, therefore, a priority in assessing AF treatment. The AFEQT score has recently been validated to measure the impact of AF on patients' QoL. Therefore, our objective was to describe the QoL in AF patients according to the AFEQT score.

Methods: This is a cross-sectional survey conducted at the cardiology department of Fattouma Bourguiba

university center during the period of July 2018 and December 2018. We used the AFEQT score which is the most used and most reliable specific way of evaluating the quality of life of AF patients.

Results: We included 183 patients. The mean age was 64 years. One hundred and fifty-nine patients (86.9%) had a good quality of life according to the AFEQT score (Global score > 50). One hundred and thirty-eight (75%) of the patients had a global AFEQT score between 50 and 80. The mean global AFEQT score for the study population was 63.89 (13.45).

Conclusion: The quality of life of non-valvular AF patients according to the AFEQT score is comparable to that of other studies.

PULSE PRESSURE IS A PREDICTIVE TOOL OF CARDIOVASCULAR EVENTS IN TUNISIAN HYPERTENSIVE PATIENTS

Oussema Wachem, Saoussen Antit, Ridha Fekih, Cyrine Antit, Ihem Boussabah, Moez Thameur, Lilia Zakhama, Soraya ben Youssef.

Cardiology Department. Internal Security Forces Hospital. La Marsa. Tunisia.

Introduction : Pulse pressure (PP) reflects the level of arterial stiffness in great vessels. We aimed to confirm that pulse pressure predicted the onset of cardiovascular events.

Methods : This is a prospective descriptive study that included 240 hypertensive patients, treated in the outpatient clinic of the Internal Security Forces Hospital in La Marsa, having consulted between 2015 and 2016 and followed for five years.

Results : The mean age was 57.4 ± 9.5 years, with a sex ratio of 1.3. Diabetes and hypertension were the most common cardiovascular risk factors. Diabetes and dyslipidemia were associated with an increase in pulse pressure but not significantly ($p = 0.07$ and 0.22 respectively). A significant increase in pulse pressure was noted when moving from the younger group of patients to the older one ($p=0.01$). On univariate analysis, a significant correlation was observed between pulse pressure, acute coronary syndrome (ACS) ($p = 0.01$) and heart failure (HF) ($p = 0.04$). A cutoff value of 60 of PP was obtained to predict the onset of global cardiovascular events with a significant correlation ($p = 0.01$). On multivariate analysis, a significant correlation was observed between pulse PP

PREDICTOR FACTORS OF MORTALITY FOR IMPLANTABLE DEFIBRILLATOR

Marwa Ben Doudou, Sofien Kamoun, Imtine Ben Mrad, Fathia Ben Moussa, Sana Fennira, Khadija Mzoughi, Ihsen Zairi, Sondes Kraiem

Service de cardiologie, Hôpital Habib Thameur

Introduction: The implantable automatic defibrillator (AED) is a device for reducing cardiovascular mortality. It delivers

two types of therapy which are internal electric shock (IES) and anti-tachycardia pacing (ATP) leading to reduction of severe ventricular arrhythmia. Despite the implementation of DAI either in primary or secondary prevention, several studies have predefined scores identifying patients who can really benefit from this treatment.

Method: Our study is a descriptive and analytical cohort including 80 patients implanted in the cardiology department of the Habib Thameur hospital from January 2010 to June 2019. Data on mortality and its causes were collected from medical records. We looked for predictors of mortality.

Results: Males were predominant (92%) in our population. Ischemic heart disease considered as the major heart disease (82%). During a follow-up of 55 months, we recorded 22 deaths corresponding to a mortality rate of 27%. The major cause of death was refractory heart Failure (68%) followed by ischemic stroke (13%), a single case of complicated infectious endocarditis, a case of colon cancer and a case of electrical storm. In multivariate analysis, the predictor factors of mortality were inappropriate therapies ($p=0.008$), ischemic heart disease ($p=0.066$) and LVEF less than 29% (0.067).

Conclusion: In our study we identified three predictor factors of mortality which are ischemic heart disease, inappropriate therapy and LVEF less than 29%.

CAUSES OF CHEST PAIN IN 148 CHILDREN REFERRED TO THE CARDIOLOGY UNIT OF KAIROUAN HOSPITAL

Yosra Messaoudi, Marwa Ben Abdallah, Oumaima Ghabi, Nejeh Ben Halima

Service de Cardiologie, Hôpital Kairouan, Tunisia.

Introduction: Chest pain is a common complaint among children. Nevertheless, few studies have investigated patients with chest pain referred to a paediatric cardiology department.

Methods: we prospectively evaluated causes of chest pain in children referred to our cardiology unit in Kairouan Hospital from January 2018 to December 2020.

Results : 148 patients presented with the chief complaint of chest pain. Ages ranged from 4 to 14 years and 81 were female (54.7%). There were 4 patients with a positive family history of sudden death. Pain occurred predominantly with exertion for 32 patients (21.6%). An electrocardiogram was obtained in 128 patients (86.4%) with abnormal findings in 11 cases. 66.21% had study of troponin levels with positive results in 4 cases. Echocardiograms were performed in all children. Of these, 11/148 (7.4%) showed abnormal results. Based on medical history, physical examination and auxiliary exams, 13 patients (8.7%) were diagnosed with cardiac chest pain (Figure). The most common diagnosis was idiopathic chest pain (81 children, 54.7%). We found that

having a recent onset of the pain (less than 15 days), palpitations, symptoms on exertion and syncope were significantly associated with a cardiac origin.

Conclusion: Chest pain in children is a common complaint

SURGICAL RESULTS FOR GROWN-UP CONGENITAL HEART DISEASE PATIENTS

Sobhi Mleyhi¹, Tarek Sandi¹, Imtine Ben Mrad², Rim Miri¹, Tesnim Besbes¹, Ihsen Zairi², Faker Ghédira¹, Skander Ben Omrane¹, Raouf Denguir¹

1. *Service de chirurgie cardiovasculaire, hôpital la Rabta*
2. *Service de cardiologie, hôpital Habib Thameur*

Introduction : The specific care of adult patients with Grown-Up Congenital Heart Disease (GUCH) in referral centers helped improve the results of surgery in terms of mortality and subsequent quality of life. In Tunisia, the results of GUCH surgery remain to be determined.

Objectives: To describe the epidemiological and clinical profiles of GUCHs in the Tunisian population, to analyze the results of surgery and to determine the predictive factors of morbidity and mortality in this population.

Methods : This is a retrospective descriptive observational study carried out in the Cardiovascular Surgery department of La Rabta hospital over a ten-year period from January 2008 to January 2018. All patients with congenital heart disease (CHD) and benefited from a surgical correction in adulthood (≥ 18 years) were included. Clinical follow-up and echocardiography was provided for all patients with a minimum required duration of six months. One hundred and thirty patients were included, depending on the type of CHD, these patients were subdivided into two groups :

Group 1 : comprising patients with cyanotic CHD ($n = 52$). The causal pathology was tetralogy of Fallot (TOF) in 59.6% of cases, Pulmonary atresia with ventricular septal defect (PAVSD) in 15.38% of cases, single ventricle defects in 11.53% of cases, Ebstein's disease and tricuspid atresia in 7.7% and 3.84% of cases respectively and finally the Double outlet right ventricle (DORV) with pulmonary stenosis in one case (0.76%) .

Group 2: comprising patients with non-cyanogenic CHD ($n = 78$), composed mainly of Atrial septal defect (ASD) and Coarctation of the Aorta (CoA) in 51.28% and 24, 36% of cases respectively. The rest is divided between the partial atrioventricular septal defect (AVSD) (15.38%), the Patent arterial duct (PAD) (5.13%), the subvalvular aortic stenosis (2.56%) and the double aortic arch (1.28%).

Results : The mean age of the whole population was 32 years old [18 - 76 years old] with a sex ratio F / M = 1.5. Arterial hypertension was the most common comorbidity (20%) followed by dyslipidemia (10%) and diabetes (5.38%). However, 54 patients (41.53%) had a history of a previous cardiac intervention, either palliative ($n = 21$; 17.15%) or a full repair ($n = 33$; 25.38%). Dyspnea (\geq NYHA II) was the

most frequent symptomatology (46.15%) and the diagnosis of congenital heart disease was fortuitously discovered in 11.53% of cases with physical examination without abnormalities in 11 patients (8.4%). In the Cyanotic CHD group, the mean SaO₂ in ambient air was 86.7% ± 8.24%. The heart rate was sinus in 80% of patients and electro-trained by a pacemaker in 4 patients. At the pre-surgical echocardiographic evaluation, the left ventricular ejection fraction (LVEF) was preserved in 125 patients (96.15%) with a mean of 65.7 ± 10.4%. Nevertheless, the latter was slightly altered in the PAVSD subgroup with a mean of 49.3 ± 11%. Angio-CT was performed in: 19 patients for CoA, one patient with double aortic arch, six single ventricle, two AT and two APSO. KT was performed in patients requiring uni-ventricular correction to check pulmonary pressures. In addition, MRI was performed in 12 patients with operated conotruncal heart disease: The mean right ventricular tele-diastolic volume was 160 ± 15.33 ml / m² [121 - 180 ml / m²] and an average right ventricular tele systolic volume of 88.92 ± 13.94 ml / m² [63 - 118 ml / m²]. The right ventricular ejection fraction (FEVD) was 43% ± 8% [30 - 56%].

Almost all of the surgeries in adulthood were restorative; only 8.46% of cases were palliative. 104 interventions were carried out under Cardiopulmonary bypass (80% of cases) and the mean time to extubation was 24 ± 12 hours. The average length of stay in intensive care unit was 5.3 days for group 1 and 2.5 days for group 2. In contrast, the average length of hospital stay in the total population was 12 days.

In-hospital mortality was 5.38% and morbidity was 33.84%. The predictors of early mortality were: NYHA ≥ III, hypoxia with SaO₂ ≤ 90%, LVEF ≤ 50%, and redo surgery. At 06 months follow-up, the functional gain in the overall population was significant (p < 0.001) (table). However, the improvement in the functional status of group 1 patients was not significant. Ultrasound data showed a significant decrease in Right atrium area from 28.6 ± 7.4 cm² to 22.1 ± 5.2 cm² (p < 0.001), right ventricular diameter from 41 ± 5, 8 to 31.4 ± 7.1 mm (p < 0.001) and systolic PAP from 46.3 ± 14.1 mmHg to 33.3 ± 7.3 mmHg (p < 0.001). We also note an improvement in right systolic function in our series.

Conclusion: GUCHs are a strongly emerging population in our country. The diagnostic and therapeutic management of these patients requires specialized human skills and a well-equipped technical platform within the framework of specialized functional units.

PARTUM CARDIOMYOPATHY: CLINICAL PICTURES AND PROGNOSIS ABOUT 20 CASES EXPERIENCE OF A TUNISIAN CENTER OF CARDIOLOGY

Mariem Drissa, Asma Brahim, Essia Mousli, Cyrine Ousji, Hassen Abou Nada, Asma Bouslimi, Amani Merdassi, Oumaima Taher, Habiba Drissa

Service de cardiologie, hôpital la Rabta

Introduction: Peripartum Cardiomyopathy (PPCM) is a

rare type of heart failure of unknown cause occurring late in pregnancy or in the postpartum period. Unfortunately, PPCM is a disease whose underlying etiology and natural history remain completely understood. Only a few case series have been published to date

Aim: To describe the clinical pictures and prognosis of PPCM

Results: We reported the cases of 20 women hospitalized in Rabta department hospital, the mean age was 32 years, 12 patients were multiparous. Caesarean section was performed in 6 cases, 2 patients had severe preeclampsia. The main presenting symptom was congestive heart failure with acute pulmonary edema. Only in five cases. Electrocardiogram (ECG) showed tachycardia; Furthermore, in all the ten cases, cardiac ultrasound showed a left ventricular diastolic diameter of more than 58 mm and a shortening fraction of or less than 25% (25-40%). The treatment administered to these patients included bed rest, oxygen, intravenous diuretics, than converting enzyme inhibitors. In five cases, circulatory support for hemodynamic instability in spite of inotropic therapy was required. 14 patients got well with clinical recovery and echocardiography normalization of left ventricular parameters but 6 women had persistent signs of chronic heart failure and ultrasound signs of left ventricular dysfunction. We reported one case of death due to a refractory heart failure.

Conclusion: PPCM is an uncommon complication of

IS THERE ANY CORRELATION BETWEEN THE EJECTION FRACTION OF THE LEFT VENTRICLE IN ACUTE CORONARY SYNDROME AND THE NEUTROPHIL LYMPHOCYTE RATIO?

Wael Yaakoubi¹, Manel Ben Hlima¹, Bassem Rekik¹, Med Amine Soula², Fourat Zoueri¹, Slim Boudiche¹, Fathia Mghaith¹, Sana Ouali¹, Med Sami Mourali¹

1. *Service d'exploration fonctionnelle et réanimation cardiaque, Hôpital la Rabta*
2. *Service d'exploration fonctionnelle et réanimation cardiaque, Hôpital Abderrahman Mami Ariana*

Background: Neutrophil to lymphocyte ratio (NLR) in peripheral blood is established to correlate with the morbidity and mortality of heart disease patients. We aimed to study the correlation between the ejection fraction of the left ventricle (EFLV) in acute coronary syndrome (ACS) and the neutrophil lymphocyte ratio.

Methods: A total of 363 patients (mean age 60±10 years) with ACS were included in this monocentric study carried at intensive care unit of LA RABTA during the first six months of 2019. The study population was divided into two groups based on admission LVEF values: LVEF < 40% and LVEF ≥ 40%.

Results: The prevalence of patients with EFLV less than 40% was about 30%. Based on ROC curve we determine that RNL cut off to predict LVSD which was about 2,74 (sensitivity = 70% and specificity = 60%). The prevalence of patients with NLR > 2,74 was higher if LVEF < 40% (64% vs 41%; p < 0,001). Univariate study showed that NLR > 2,74 increases the risk of LVSD about 2,65 (OR = 2,65; CI 95% [1,6-4,2]). A correlation analysis found that NLR was negatively correlated with EFLV (r = -0.2, p < 0,001) in patients hospitalized for ACS. We have established an affine negative correlation curve (Fig 1)

Conclusion: There is a statistically significant correlation between EFLV and RNL for this reason total and differential leucocyte count analyses - which are basic and inexpensive - must be used in evaluating patients with ACS.

PREVALENCE AND PREDICTIVE FACTORS OF ATRIAL FIBRILLATION AND STROKE IN PATIENTS WITH ASYMPTOMATIC MITRAL STENOSIS: ABOUT A FIVE-YEAR FOLLOW-UP

Wael Yaakoubi, Karima Tamallah, Mariem Abid, Nadhem Hajlaoui, Aabdedeyem Haggui, Wafa Fehri

Service de cardiologie, hôpital militaire Tunis, Tunisie.

Background: The two-dimensional strain (strain-2D) is an objective echocardiographic technique allowing the quantification of myocardial deformation. We set out to study atrial function in patients with asymptomatic mitral stenosis (MS) and to specify its prognostic contribution.

Methods: We included 80 consecutive patients (including 53 patients followed) followed for severe or moderately severe rheumatic MS, asymptomatic, during the period from January 2015 to June 2020. The patients followed were divided into two groups according to one criterion of judgment composed of: the occurrence of AF and stroke.

Results: These patients were divided into two groups: 19 patients had AF and or stroke and 34 patients did not have them during follow up.

It was found that only the PACS was significantly lower in the population having had these two complications (7.2 ± 2.9 vs 9.4 ± 4.1 , p = 0.049). There was no significant difference between the two compared groups according to PALS and left atrium area.

The analysis of the ROC curve (PACS vs stroke and / or AF) objected that patients with a PACS value less than 10% have a significantly higher incidence of stroke and AF (89% vs 61%, p = 0.03) with a sensitivity of 50% and a specificity of 74% (AUC = 0.65).

In our study, we did not find an independent predictor of the onset of stroke and / or AF in the follow-up of an asymptomatic patient with severe or moderate MS: PACS < 10% (p = 0.06; OR = 1.18; 95% CI: [0.9-1.14]) and PALS < 25 (p = 0.11; OR = 1.06; 95% CI: [0.9-1.14]).

Conclusion: Our study demonstrated that the lower values of left atrial strain can be a predictor of AF and or stroke.

COMPARISON OF THE PREVALENCE OF INTRA-HOSPITAL COMPLICATIONS BETWEEN 2015 AND 2020 IN ELDERLY CORONARY PATIENTS.

Moslem Ben Abdallah, Fares Azaiez, Nour Cherif, Fakher Jaoued, Rami Tlili, Youssef Ben Ameer

Service de cardiologie, hôpital Mongi Slim, Tunisie.

Introduction: Acute coronary syndrome (ACS) is one of the main reasons for hospitalization in a cardiology department. This is a serious event responsible for several hospital complications that can be life-threatening for patients, especially when they are elderly.

Methods: Uni-centric retrospective study involving 120 patients over 65 years of age admitted with acute coronary syndrome in the cardiology department of Mongi Slim hospital. The patients were divided into two populations: Population A ACS in 2020; Population B ACS in 2015. The objective of the study was to determine the difference between the year 2015 and the year 2020 in terms the occurrence of intra-hospital complications.

Results: Population A versus (vs) B. The mean age of the patients was 70.13 ± 4.34 years vs 72.85 ± 6.54 with extremes at 80 vs 87 and 65 vs 66 years. The two populations were made up of 68.42 vs 67.65% men, for a sex ratio of 0.46 vs 0.47. The average length of stay was 9.34 vs 11.6 days with extremes between 3-27 vs 3-40 days. The average time taken to perform coronary angiography was 110.6 vs 123.8 hours. Coronary angiography approach was 97 vs 75.2% radial and 2.7 vs 24.7% femoral. The percentage of complications occurring in hospital was 26.31 vs 41.7% of which 50 vs 17% related to left ventricular insufficiency, 30.7 vs 45% Contrast nephropathy.

Conclusion: During this study a faster management and angiographic delay in 2020 than in 2015 and a lower percentage of intra-hospital complications.

HEART FAILURE WITH IMPROVED EJECTION FRACTION: CHARACTERISTICS AND OUTCOMES

Ali Khorchani¹, Zine El Abidine Ben Ali¹, Ala Eddine Dali¹, Sami Milouchi¹, Amine Boufares¹, Iheb Ben Krayen¹, Hichem Mtimet¹, Mohamed Ghassen Ben Haj Mbarek¹, Oussama Bouhamed²

1. *Service de cardiologie, hôpital régional de Médenine*
2. *Service d'anesthésie-réanimation, hôpital régional de Médenine*

Background : A new subset of heart failure (HF) patients has been recently identified, representing patients with reduced LVEF who have demonstrated an improvement in systolic function. We sought by this study to describe its epidemiological and clinical characteristic.

Methods : we conducted a monocentric survey including patients diagnosed with HF with reduced LVEF (< 40%) attending the cardiology department of Medenine. after a 36-month follow-up involving at least one echocardiography

re-examination, we identified patients who had shown an improvement of the LVEF to reach a LVEF > 40%.

Results : In all, 223 patients were enrolled in the study, based on initial LVEF, 87 (39%) patients were classified as having HFREF. Among patients with reduced LVEF (mean age: 66.1; gender ratio: 1.55), 13.8% (12 patients) had shown an improvement of LVEF and then considered to have HFIEF and 86.2% (75 patients) had a persistent HFREF. Patients with HFIEF were younger (mean age: 58.5 vs 67.7; $p=0.04$), had more recent onset of heart failure (de Novo HF: 41.6% vs 22.9%; $p=0.01$) and less diabetes (25% vs 56%; 0.04). Prevalence of HTA and AF were similar (HTA :41.7% vs 52%; 0.5 ; AF: 16.7% vs 28% ; 0.4). All patients with HFIEF were treated with guideline-directed HF medical therapy.

Conclusion : HFIEF is a distinct HF subgroup with some clinical characteristics and treated with more intense HF medication regimen.

INITIAL, MEDIUM-AND LONG-TERM OUTCOMES OF TRANSCATHETER CLOSURE OF PATENT DUCTUS ARTERIOSUS IN LOWER WEIGHT INFANTS

Safa Dardouri, Rym Gribaa, Aymen Hraiech, Imen Ben Ali, Mehdi Slim, Ilyess Naffeti

Service de cardiologie, hôpital Sahloul Sousse

Introduction: Transcatheter closure of patent ductus arteriosus (PDA) is a well-established procedure.

Aim: To assess initial, midterm and long term results of transcatheter closure of PDA in lower weight infants.

Methods: it was a mono-center retrospective study, which has included 33 patients in lower weight less than 6 kg, hospitalized in the cardiology department of Sahloul hospital for percutaneous closure of their PDA. This was during the period from September 2003 to June 2021.

Results: the mean age of patients during cardiac catheterization was 10.6 ± 5.4 months. A clear female predominance was noted with a sex ratio of 2.6. All patients were full-term newborn. Success rate of our procedure was 90.9% with 30 devices that were well deployed, and three cases of failure (9.1%). In the first case the device was removed before its release because it was obstructive at the level of the aorta and in the other two cases the device was removed because it migrated to the level of the pulmonary artery (PA). These three patients were referred for surgery. The mean duration of follow-up was 32.5 ± 27.6 months. During follow-up, two cases of pulmonary protrusion of the device were documented, with an insignificant gradient in the left PA and which was accepted. A case of aortic protrusion deemed insignificant with a maximum trans aortic gradient at 24mmHg. Only one case of pulmonary arterial hypertension (PAH) was noted, and it was related to a large ASD ostium secundum.

No case of residual shunt or repermeabilization of the device was noted.

Conclusion: Catheter-based PDA closure is the procedure of choice for ductal closure in adults, children, and infants ≥ 6 kg. Given evidence among older counterparts, interest in catheter-based closure of the PDA in lower weight <6 kg infants is growing.

RISK FACTORS FOR MORBIDITY AND MORTALITY IN CAROTID SURGERY: ABOUT 140 CASES

Amna Damak¹, Chaker Jaber¹, Taieb Cherif², Mouna Bousnina², Amine Jemel¹, Sofiane Jerbi¹

1. *CCVT Abderrahman Mami Ariana*

2. *CCVT Sahloul Sousse*

Short-term and long-term complications of carotid revascularization are unavoidable. The aim of our study was to look into the risk factors for morbidity and mortality in carotid surgery.

This was a bi-centric retrospective descriptive study which involved 140 carotid revascularizations in 130 patients, for carotid stenosis, between January 2005 and December 2018 at the cardiovascular and thoracic surgery departments of Ariana and Sousse, Tunisia.

Coronary artery disease and combined surgery (carotid + coronary) seemed to be the most important risk factors for early postoperative mortality in our series ($p<0.001$). Dyslipidaemia appeared also to influence short-term mortality ($p=0.007$). We also noted that the occurrence of postoperative pneumonia was statistically significant in patients operated on by combined surgery ($p<0.001$) and in patients who were not extubated on the operating table ($p=0.011$). Intervention duration greater than 90 minutes appeared to be a risk factor for early mortality ($p=0.017$).

Endarterectomy is a safe and satisfactory treatment for stenosis of the extra cranial internal carotid artery.

CORRELATION BETWEEN THE EJECTION FRACTION AND THE STRAIN OF LEFT VENTRICLE IN 2D ECHOCARDIOGRAPHY AFTER AN ACUTE CORONARY SYNDROME : ABOUT A MONOCENTERIC OBSERVATIONAL STUDY

Wael Yaakoubi¹, Manel Ben Hlima², Bassem Rekiq², Yassine Marzouki², Fourat Zoueri², Slim Boudiche², Fathia Mghaith², Sana Ouali², Med Sami Mourali²

1. *Service d'exploration fonctionnelle et réanimation cardiaque, hôpital Abderrahman Mami Ariana*

2. *Service d'exploration fonctionnelle et réanimation cardiaque, hôpital la Rabta*

Background: Left ventricular ejection fraction (LVEF) is an established method for evaluation of left ventricular (LV) systolic function. Global longitudinal strain (GLS) by speckle tracking

echocardiography seems to be an important additive method for evaluation of LV function with a good correlation to LVEF. Our aim was to study correlation between GLS and LVEF.

Methods: Three hundred sixty-three patients with recent Acute Coronary Syndrome (ACS) were selected during first six months of 2019 in cardiology intensive care of RABTA hospital. This population underwent echocardiographic examination by expert echocardiographers. Echocardiographers performed image analysis for evaluation of: GLS which was measured using speckle tracking echocardiography and LVEF which was calculated by Simpson's biplane method.

Results: Three hundred sixty-three patients with recent (ACS) were selected during first six months of 2019, mean age of patients was 60 years \pm 10, sixty-eight of them were men. It has been shown that there is a very strong negative correlation between the ejection fraction and the global longitudinal strain of the left ventricle ($r = -0.7$, $p < 0.001$). Using the ROC curve, it was shown that the (GLS) of the left ventricle (LV) is a parameter closely related to left ventricular dysfunction (LVEF $< 40\%$) with an area under the curve (AUC) greater than 0.9 (> 0.5). From the ROC curve a cut off correlated with LV dysfunction was determined, it was (-13%) of which both the sensitivity and the specificity were 80%. In our study 65% of patients with LV dysfunction (LVEF $< 40\%$) after ACS had (GLS) greater than or equal to -13% ($p < 0.001$).

Conclusion: The ejection fraction and SLG of LV are two echocardiographic parameters intimately related, they have a significant negative correlation. After an ACS the cut-off (-13%) of SLG of LV is correlated to a LVEF less than 40% which is a very powerful prognostic parameter.

POSTOPERATIVE PERMANENT PACEMAKER IMPLANTATION IN PATIENTS UNDERGOING CARDIAC SURGERY

Emna Allouche, Mohamed Selmen Aissa, Syrine Neji, Faten Boudiche, Hakim Ben Jemaa, Mohamed Beji, Wejdene Ouechtati, Habib Ben Ahmed, Leila Bezdeh

Service de cardiologie, hôpital Charles Nicolle

Background: High degree atrioventricular blocks are uncommon but potentially life-threatening complications of cardiac surgery. They impact the prognosis of heart disease and they require specific management up to the implantation of permanent pacemakers

We aimed to determine the onset delay of this complication after surgery, pacemakers' implantation delay and to identify predictive factors of device dependency during the follow-up of patients.

Methods: We conducted a retrospective descriptive study including all patients diagnosed with high degree cardiac conduction disorder after cardiac surgery under extracorporeal circulation requiring pacemaker implantation, from 1997 to 2020 in the cardiology department of

Charles Nicolle hospital. Clinical and electrocardiographic characteristics were recorded before cardiac surgery, type of heart disease and its surgery indication, type of bradyarrhythmia and its onset delay after surgery, during follow-up device dependency was evaluated.

Results: A total of 33 patients (19 men and 14 women) were enrolled in our study. The mean age of our patients was 46 years.

The number of patients who underwent surgical correction of acquired heart disease was higher (63%).

Before surgery, 20 patients were in sinus rhythm. A right bundle branch block was detected in 19 patients' electrocardiograms; this bundle branch block was complete in 15 patients. Left Anterior Fascicular Block was present in 13 patients (39%)

among thirty-three patients benefited of cardiac pacing, 90% were implanted for complete atrioventricular block, two patients were implanted for symptomatic second-degree type 2 atrioventricular block and one patient was implanted for tachycardia-bradycardia syndrome

After surgery, 12 patients (36%) presented a complete atrioventricular block immediately. For others, the cardiac conduction disease was late-onset with delays ranging from 10 days to 31 years and an average delay of 71 months.

Pacemaker insertion delay varied from 0 to 35 days with an average delay of 8 days. After cardiac pacing and at the last follow-up, 13 patients were dependent on their device.

The immediately onset of AVB was the only factor significantly correlated with the patient's pacemaker dependency ($p = 0.041$).

Conclusion : This study highlights the need for regular and prolonged rhythmic monitoring of cardiac surgery patients because a conductive disorder may occur late.

VASCULAR INVOLVEMENT IN BEHÇET'S DISEASE

Imene Chaabene, Soumeia Tahri, Malek Kechida, Syrine Daada, Sonia Hammami, Wajih Ben Abdallah, Rim Klii, Ines Khochtali

Service de médecine interne, hôpital Fattouma Bourguiba Monastir

Introduction: Behçet's disease (BD) is a multisystemic inflammatory vasculitis, which can affect all types and sizes of blood vessels. In this study, we reported the characteristics of vascular involvement in patients with BD.

Methods: In total, 243 patients with BD were collected, retrospectively in the Internal Medicine department over 18 years.

Results: Vascular involvement was present in 72 patients (29.6%), whose 57 men and 15 women. The mean age was 32.9 years (range: 5-56 years). It revealed the disease in 26.3% of cases. Venous involvement was predominant, found in 68% of patients. Venous thrombosis interested: the upper limbs (51%), the lower limbs (38.7%), the pulmonary veins (18.3%), the inferior vena cava (12.2%)

and the cerebral veins in 1 patient. Superficial venous thrombosis was present in 20.8% of cases. Arterial involvement was present in 11.1% of patients. It included pulmonary artery aneurysms in 8 cases and occlusion of the central retinal artery in one patient. Other associated systemic manifestations were: skin and mucous membrane disorders (100%), articular (34.7%), ophthalmological (29.2%), neurological (27.8%) and cardiac involvement in 7 patients. Treatment was based on long term curative anticoagulation (70%), corticosteroid therapy (50%) and immunosuppressants (21%). Embolization was performed in two patients with good results.

Conclusion: Our study illustrates the frequency and the polymorphism of vascular involvement in BD.

AMBULATORY BLOOD PRESSURE MONITORING: PROFILE IN TREATED HYPERTENSIVE PATIENTS

Ridha Fekih, Saoussen Antit, Cyrine Antit, Emna Rezik, Marwa Abdelhedi, Neji Lahbib, Oussama Wachem, Dorra Aouadi, Elhem Boussabah, Moez Thameur, Lilia Zakhama, Soraya Ben Youssef

Service de cardiologie, hôpital FSI la Marsa

Background: Ambulatory blood pressure (BP) monitoring (ABPM) is more accurate than the conventional office BP measurement in predicting cardiovascular risk. Thus, we searched for a correlation between the occurrence of cardiovascular events (CVE) and the profile of ABPM in treated hypertensive patients.

Methods: This is a prospective descriptive study that included 240 hypertensive patients, treated and followed by ABPM in the cardiology department of the hospital of the internal security forces of Marsa and having consulted between 2015 and 2016.

Results: The mean age was 57.4 ± 9.5 years, with a sex ratio of 1.33. Diabetes and hypertension were the most common cardiovascular risk factors (42.1%). The ABPM analysis objected an average 24h systolic blood pressure (SBP) of 129.5 ± 14 mmHg and an average 24 hour diastolic blood pressure (DBP) of 74.7 ± 9.8 mmHg. During follow-up, 43 CVE were collected over 5 years with 2 heart failures, 15 acute coronary syndromes, 12 blood pressure peaks, 13 atrial fibrillations and 1 cerebral vascular accident. In univariate analysis, there was a significant difference between patients with or without a CVE, for age ($p=0,026$), mean SBP ($p=0,011$), maximum DBP ($p=0,035$) and pulse pressure ($p=0,001$). In multivariate analysis, independent factors associated with cardiovascular events were mean nocturnal SBP (OR=1,04; $p=0,001$) and maximal DBP (OR=0,96; $p=0,02$).

Conclusion: Maximum nocturnal DBP is a protective factor from CVE, especially of coronary.

CORRELATION BETWEEN TRANSTHORACIC ECHOCARDIOGRAPHY AND CARDIAC MRI FINDINGS IN ACUTE MYOCARDITIS

Souha Abid, Saoussen Antit, Dorra Aouadi, Ridha Fekikh, Marwa Abdelhedi, Elhem Boussabah, Moez Thameur, Lilia Zakhama, Soraya Ben Youssef

Service de cardiologie, hôpital FSI la Marsa

Background: The diagnosis of acute myocarditis requires the use of multiple diagnostic tests. The aim of this study is to evaluate the correlation between transthoracic echocardiography (TTE) and cardiac MRI (CMR) findings in acute myocarditis.

Methods: This was a retrospective study of 31 patients hospitalized for acute myocarditis at the cardiology department of the Interior Security Forces Hospital-La Marsa between 2011 and 2017.

Results: The mean age of our patients was 36.5 ± 13 years. Left ventricular ejection fraction (LVEF) was preserved in 84% of cases. Three patients had a reduced LVEF. Two patients had a mid-range LVEF. Wall motion abnormalities (WMA) were noted in fourteen patients: segmental hypokinesia in nine patients, akinesia in four patients and only one case of global hypokinesia. WMA were predominantly observed in the inferior and septal walls. CMR was performed in all patients. LVEF was reduced in five patients (16%). WMA were detected in ten patients (32%). Spontaneous epicardial hypersignal in T2 sequence was observed in 42% of cases associated with a late Gadolinium enhancement in the same territory. The concerned territories were respectively lateral (39%), septal (32%), anterior (23%) and inferior (21%) walls.

Conclusion: In our study, there was no demonstrated correlation between specific WMA in CMR and TTE. WMA were more frequently detected by TTE, this could be explained by the fact that TTE is usually performed earlier in the course of the disease.

INCIDENCE DENSITY OF INTERNAL ELECTRIC SHOCK

Marwa Ben Dou Dou, Sofiene Kamoun, Imtine Ben Mrad, Fathia Ben Moussa, Sarra Fennira, Khadija Mzoughi, Ihnen Zairi, Sondes Kraiem

Service de cardiologie, hôpital Habib Thameur

Introduction: To date, the implantable automatic defibrillator (AED) is the only effective therapy for the prevention of sudden rhythmic death either in primary or secondary prevention.

Method: We conducted a descriptive historical-prospective cohort study that included 80 patients implanted with an implantable automatic defibrillator between January 2010 and June 2019 in the cardiology department of Habib Thameur Hospital.

Results: In our study there was a clear male predominance (92%). Ischemic heart disease was found in 66 cases. During a

median follow-up of 55 months, 233 appropriate shock (87.3%) and 34 inappropriate shock (12.7%) were recorded. The incidence density of IEC was 2.06 shocks/patient-year at one year, 0.99 shock/patient-year at 3 years and 0.50 shock/patient-year at 5 years. For appropriate shock (CEIA) this incidence density was 1.72 shock/patient-year at one year, 0.98 shock/patient-year at 3 years and 0.42 shock/patient-year at 5 years. Spearman's correlation coefficient is -1, which is in favor of decreasing this incidence density over time. For inappropriate shocks (CEII), this incidence density was 0.33 shock/patient-year at one year, 0.02 shock/patient-year at 3 years and 0.09 shock/patient-year at 5 years. Spearman's correlation coefficient is not significantly nonzero, which is in favor of a tendency towards stability as a function of time. We found that the incidence density of total IEC was decreasing over time. This decrease concerned the CEIA while the incidence density of CEII was stable during follow-up.

CARDIAC REPOLARIZATION PARAMETERS ACCORDING TO BODY MASS INDEX

Boutheina Besbes, Imtine Ben Mrad, Khadija Mzoughi, Zeineb Oumaya, Noufeil Ben Kahla, Ibrahim Arbaoui, Fatma Daoued, Sofien Kamoun, Ihsen Zairi, Sondes Kraiem

Service de cardiologie, hôpital Habib Thameur

Introduction: The electrocardiogram (ECG) is a commonly used diagnostic tool in cardiology. Its interpretation depends on age, sex, and ethnicity. Although the impact of obesity on ECG parameters has been well studied, few studies have focused on the impact of BMI on ECG parameters in situation other than obesity. The goal of this study was to investigate how BMI affected electrocardiographic repolarization parameters in apparently healthy adults.

Methods: We conducted a prospective study in apparently healthy volunteers aged between 18 and 65 years. Body mass index was calculated, and 12-lead ECG was performed for all participants. Subjects were divided into four groups according to BMI class: underweight (<18.5 kg/m²), normal weight (18.5 to 24.9 kg/m²), overweight (25 to 29.9 kg/m²), and obese (≥ 30 kg/m²). Backward multivariate regression analysis was performed to assess the relationship between BMI and QT (milliseconds) and corrected QT intervals durations (QTc) (milliseconds). The QT and RR intervals were averaged over three consecutive complexes in lead II in sinus rhythm. QTc was calculated according to Bazett's formula ($QTc = QT/\sqrt{RR}$).

Results: A total of 174 patients (75 males and 99 females) were enrolled in this study with a mean age of 36.8 ± years [18 - 65]. Of the study population, 12.6 % were presented as underweight (male, 2.7%; female, 20.2 %), 30.5 % as normal weight (male, 49.3 %; female, 16.2 %), 31.0% as overweight (male, 36 %; female, 27.3 %) and 25.9% as obese (male, 12%; female, 36.4%). The mean BMI was 26.3±5.8 Kg/m² with extremes of 14.5 and 41.2 Kg/m². Abdominal obesity was

noted in 23 males (30.7 %) and 76 females (76.8 %) with a total prevalence of 56.9 %. The prevalence of abdominal obesity increased significantly with BMI categories (p<0.001). There was no significant difference in QT interval between the four groups. With increasing BMI, QTc interval increased (P<0.001). In univariate analysis, BMI was significantly associated with QTc interval (r=0.438, p=0.001). In the backward multivariate model, BMI was independently associated with QTc (r=0.422, p<0.001).

Conclusion: BMI increment was independently associated with QTc interval lengthening. The prognostic significance of this is unclear but worrying in light of the known association between prolonged QTc interval and mortality.

COMPARISON OF TWO HYDRATION PROTOCOLS FOR PREVENTING CONTRAST INDUCED NEPHROPATHY

Khadija Mzoughi¹, Imtine Ben Mrad¹, Hela Jebali², Ella Lahmaier¹, Emna Chaabouni², Mariem Hajji³, Noufeil Belkahla¹, Sofien Kamoun¹, Ihsen Zairi¹, Mohamed Karim Zouaghi², Sondos Kraiem¹

1. *Service de cardiologie, hôpital Habib Thameur*

2. *Service de néphrologie, hôpital la Rabta*

3. *Service de néphrologie, hôpital Charles Nicolle*

Contrast induced nephropathy is the third leading cause of acute renal failure in hospitals, after functional renal failure and drug-related causes. Hydration, choosing a low osmolarity contrast medium and reducing the injected dose are the best ways to prevent this complication.

The aim of this work was to evaluate the benefits of a hydration protocol using bicarbonate serum in comparison with physiological serum.

Methods: Prospective study of 158 consecutive patients explored by coronary angiography or treated by coronary angioplasty in the cardiology department of Habib Thameur hospital between December 2017 and February 2018. The patients were divided into 4 groups according to the rehydration solution and the contrast agents used: group 1: isotonic physiological serum / Omnipaque (47 patients), group 2: isotonic physiological serum / Ultravist (33 patients), group 3: 14% bicarbonate serum / Omnipaque (44 patients), group 4: 14 bicarbonate serum % / Ultravist (34 patients). Nephropathy induced by iodinated contrast media was defined as an increase in plasma creatinine of 5 mg / L (44 μmol / L) or 25% above baseline 48 to 72 hours after the procedure.

Results: The mean age of our patients was 60 ± 11 years (29 to 82 years), with a predominance of men (63.9%). The overall incidence of contrast induced nephropathy was 9.5% or 9 patients. The four study groups were comparable to baseline in terms of age, gender, medical history, concomitant medication, clinical laboratory data, and contrast volume. Contrast induced nephropathy occurred in 6.3% in the physiological saline group and 3.2% in the sodium bicarbonate group, with a non-significant difference (p = 0.19).

Conclusion: In our study, hydration with bicarbonate serum has not shown any benefit in preventing Contrast induced nephropathy compared to hydration with physiological saline. A multi-center observational study is needed to confirm our results.

SUDDEN CARDIAC DEATH IN YOUNG ADULTS: RETROSPECTIVE STUDY

Maroua Abdallah¹, Mlayah Souheil², Yosra Messaoudi¹, Yassine Selmi¹, Hibar Idriss³, Jamel Ahmed³, Neje Ben Hlima³

1. *Service de cardiologie, hôpital Kairouan*
2. *Service de médecine légale, hôpital Kairouan*
3. *Service de cardiologie, hôpital Abderrahman Mami Ariana*

Background : The occurrence of death in a young adult remains an event experienced as dramatic for the family as well as society and doctors. Sudden death at any age constitutes a medico-legal barrier to burial.

Methods : We performed a retrospective study using autopsy data from the Department of forensic Medicine in Farhat Hached hospital. A review of all autopsies performed for 17 years was done. In each case, clinical information, and circumstances of death were obtained. A complete forensic autopsy and histological, and toxicological investigations were performed. We have included all sudden cardiac death in persons aged between 18 and 35 years.

Results : We collected 120 cases of sudden cardiac death during the studied period. The mean age of the studied population was 26.3 years. SCD is significantly more prevalent in young males. General etiologic categories include heritable and acquired cardiomyopathies and arrhythmia syndromes (30%), structural congenital heart diseases (12.4 %), coronary abnormalities (14.6 %) and other abnormalities.

Conclusion : The evaluation of the young victims of SCD and their relatives is an effective strategy for the detection of familiar cardiovascular.

SUDDEN CARDIAC DEATH IN THE ELDERLY: A 4-YEAR RETROSPECTIVE DESCRIPTIVE STUDY

Oumeima Brahim¹, Elyes Turki¹, Raja Ghzel²

1. *Service de médecine légale, hôpital Kairouan*
2. *Service de médecine d'urgences, hôpital Kairouan*

Introduction: Sudden cardiac death (SCD) is defined as the unexpected natural death of a cardiovascular cause in any circumstance and at any age. Although SCD in the elderly is not exceptional, publications in this area are rare. Our study aimed to highlight the epidemic peculiarities of sudden cardiac death in elderly people in the center of Tunisia.

Methods: We conducted a retrospective study over a period

of 4 years (2017- 2020) on all cases of sudden cardiac death of the elderly subject (age over 60 years) autopsied in the Department of Forensic Medicine in the Hospital of Kairouan.

Results: During the study period, 71 cases were recorded. The age of the deceased varied from 60 to 91 years old with an average of 74. A male predominance was noted with a sex ratio of 3. High blood pressure, smoking, and diabetes were the most common cardiovascular risk factors, with 44.7%, 40.8%, and 33.7% of cases, respectively. A history of heart disease was identified in 38.6% of victims. The death occurred at home in 71.8% of cases. A winter excess mortality was noted (21.5%) with a peak during January. Ischemic heart disease was the most common cause of death with 53 cases (74%), followed by hypertrophic cardiomyopathy in 15 cases (21%) and pulmonary embolism in two cases.

Conclusion: Despite medical advances in diagnostics and therapeutics, the SCD rate of the elderly remains important. Cardiovascular risk factors control is necessary.

THE VALUE OF HOLTER MONITORING IN THE ASSESSMENT OF SCHOOL-AGE CHILDREN

Khalil Ouaghlani, Kaouthar Hakim, Amine Boussema, Houda Ben Arbia, Sana Said, Hela Msaad, Fatma Ouarda
Service de cardiologie pédiatrique, hôpital la Rabta

Introduction : Holter monitoring (HM) has been established as one of the most effective noninvasive clinical tools in the diagnosis, assessment and risk stratification of cardiac patients. However, studies in the pediatric age group are limited. Children may have symptoms like syncope, pre-syncope, vertigo, dizziness, chest pain and palpitations. These symptoms are terrifying events for them, a significant cause of concern for their family and a common reason of referral to a paediatric cardiologist. When first-line non-invasive studies such as ECG and echocardiography do not reveal any underlying structural or functional cardiac problem, the diagnosis of these unexplained symptoms is a dilemma. The present work aims at determining the yield of Holter monitoring in the investigation of these symptoms in the school-age pediatric population.

Methods: Retrospective study of the files and Holter monitoring strips of children sent to our unit for 24h-Holter ECG monitoring during the year 2019. All children of the school-age (6years to 12 years) were enrolled. We registered the diagnostic findings and we defined the abnormal findings potentially related to the symptom as an abnormal Holter test. Records of 509 pediatric patients (53.4% males and 46.6% females) were reviewed. Their average age was 9.61± 1.88 years. Indications for which Holter monitoring was done were analyzed as well as all the abnormalities diagnosed and factors that may increase Holter yield.

Results : The most common symptoms were palpitations (37.7%), chest pain (12.6%), lightheadedness (8.6%) and syncope 5.1%). 14.5% of the patients were asymptomatic

and holter was performed to look for silent abnormalities such as QT lengthening In case of congenital deafness. A sum of 139 Holter recordings were found abnormal with a total diagnostic yield of 27.3%. 5.5% of the patients had a structural cardiac disease either congenital or acquired. The most common abnormalities were vagal hypertonia (10%), frequent ventricular premature beats (8.3%), atrial ectopic rhythm most commonly coronary sinus rhythm (3.3%) and supraventricular premature beats (2.8%). Although benign arrhythmias were common, serious arrhythmias, (Runs of Non sustained ventricular tachycardia / High degree atrioventricular block) were detected in 2.4%. An abnormal ECG was not associated with a higher diagnostic yield ($p=0.224$).

Conclusions : HM has an extremely valuable role in the assessment of pediatric patients .However, the yield of HM is not related to the presence of cardiac structural disease or abnormal ECG in this group of patients.

PARTICULARITIES OF ATRIOVENTRICULAR SEPTAL DEFECT IN PEOPLE WITH DOWN'S SYNDROME: ABOUT A MONO-CENTRIC STUDY

Kaouthar Hakim, Roueida Khalifa, Ghada Hamila, Hela Msaad, Khalil Ouaghlan, Syrine Triki, Sawsen Ataoui, Fatma Ouarda
Service de cardiologie pédiatrique, hôpital la Rabta

Introduction: AVSD is a common congenital heart disease. It is particularly associated with Down's syndrome (DS).

Methods : This is a descriptive single-center retrospective study including 200 patients followed in the pediatric cardiology department of LaRabta hospital for AVSD between 1994 and 2020. The objective is to determine the peculiarities of AVSD in DS.

Results : 98 patients (50%) had DS. The diagnosis was earlier in the group with DS (10.3 ± 23 vs. 40 ± 55 months; $p<0.001$). 61.3% had full AVSD, 27.5% had intermediate AVSD and 11.2% had partial AVSD. DS was then more found in the complete AVSD ($p <0.001$). Antenatal diagnosis was only made in 6 patients, 5 patients had DS. Dysmorphic syndrome was present in 51% of cases; 92% had DS. A statistically significant association was found between valvular dysplasia and the absence of DS ($p=0.046$). Mitral regurgitation was found in 86% of patients, more common with DS ($p=0.01$). Pulmonary artery hypertension was more common in the group with DS. The immediate postoperative outcome was favorable in the majority of cases and DS was not associated with higher complications ($p=0.32$). A residual mitral regurgitation was observed in 83% of patients with DS but without significant difference ($p=0.13$). The rate of reoperation and early postoperative death wasn't statistically higher in DS.

Conclusion : DS would allow earlier diagnosis of AVSD, but prenatal diagnosis remains the most important cornerstone of better management.

EPIDEMIOLOGY OF PEDIATRIC HEART DISEASE IN TUNISIA

Asmaou Keita, Houda Ben Arbia, Khalil Ouaghlan, Kaouthar Hakim, Sana Said, Syrine Triki, Hela Msaad, Fatma Ouarda
Service de cardiologie pédiatrique, hôpital la Rabta

Introduction: The epidemiology of heart disease in children is different from adults. In developed countries, it is dominated by congenital heart defects with a prevalence of 1%. On the other hand, acquired heart diseases are not uncommon and are dominated by cardiomyopathies and Kawasaki disease.

Aim: To provide a report of the current epidemiology of pediatric heart disease in a north African country such as Tunisia.

Material and methods: A retrospective descriptive study led in the department of pediatric cardiology of La Rabta hospital. It consisted of gathering all the patients hospitalized at least once during the year 2018.

Results: 553 patients; the sex - ratio was of 1,36. The middle age of diagnosis was of 2 years \pm 5,72 with extremes of one day and 57 years. The children of one year represented 45,21% and those with age superior than 5 years represented 24,59% of the population. Left-to-right shunt lesions were at the 1st place of CHD representing 45,93%, consisting especially of ventricular septal defect (24,23%) and atrial septal defect (9,22%), at the 2nd place Right ventricular outflow tract obstruction lesions (9,22%), pulmonary stenosis was the leading anomaly in this group (8,5%). In the 3rd rank Left ventricular outflow tract obstruction lesions (8,6%), coarctation of the aorta was encountered in 4,52% of the patients. As to acquired heart diseases, cardiomyopathies were predominant, with dilated cardiomyopathy at the 1st place representing 2,35% of the patients, and hypertrophic cardiomyopathy at the 2nd place (1,63%).

Conclusion: the nosological distribution of heart diseases in our survey is the same as in all the other studies, Left-to- right shunt lesions being the most common pathology. We provide a rich and up-to-date description of the clinical epidemiology of heart disease in Tunisian children while yielding data that could be useful for screening plans nationwide.

ACUTE KIDNEY INJURY IN CARDIAC INTENSIVE CARE UNITS

Emna Chaabouni, Sana Ouali, Selim Boudiche, Fathia Mghaieth, Mohamed Sami Mourali

Service d'explorations fonctionnelles et soins intensifs cardiologiques, hôpital La Rabta

Introduction: Acute renal failure is a serious and frequent complication in cardiac intensive care units. However, few evaluative studies exist examining its epidemiological and

etiological characteristics. The aim of our study was to evaluate the epidemiology and etiology of the acute renal failure in cardiac intensive care units and try to identify the predictor factor of mortality.

Methods: This was a prospective and descriptive study that collects patients managed in the intensive cardiac care unit of the University Hospital center "La Rabta" hospital from February 2020 to May 2020. Excluded from the study were subjects on chronic dialysis and patients on a chronic non-terminal renal failure. Statistical analyses were performed using SPSS22.0

Results: The incidence of acute renal failure was 17,3%. We collected 72 patients of mean age 63 ± 12 years and sex ratio (M / F) = 2.27. Acute decompensated heart failure was the most frequent reason for admission to the hospital (26.4%). The prevalence of diabetes mellitus was 56.9% and hypertension 55.6%. The acute kidney injury on chronic renal failure was scored in 16.7% of cases. Oligoanuria was observed in 22.2% of cases. The average glomerular filtration rate was 31.4 ± 12.5 ml / min. Hyperkalaemia occurred in 7 cases (9.7%). It was functional renal failure in 65.3% of cases. The mechanism was multifactorial, mainly: a low cardiac output (82.6%), diuretic medications (80.4%), and renin-angiotensin system inhibitor medications (in 56.5% of cases). Iodinated contrast agents induced 44% of acute organic renal failure. Renal replacement therapy was indicated in 11.8% of our patients. Mortality was 12.5%. Mortality was associated with: obesity ($p = 0.028$), oligo-anuria ($p = <0.0001$), uremia ($p = 0.024$); serum potassium ($p = 0.028$) and renal replacement therapy ($p = <0.0001$).

Conclusion: Acute renal failure in cardiac intensive care has complex and multifactorial mechanism. It is burdened with a heavy morbidity and mortality. Prevention is possible thanks to simple and inexpensive means, such as the identification of patients at risk, eviction of nephrotoxic and correction of the volume status of patients.

ECHOCARDIOGRAPHIC PARAMETERS IN SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS

Mariem Drissa, Asma Brahim , Essia Mousli, Cyrine Ousji, Hassen abou Nada, Asma Bouslimi, Amani Merdassi, Oumaima Taher, Habiba Drissa

Service de cardiologie adulte, hôpital la Rabta

Introduction: Systemic lupus erythematosus (SLE) is an autoimmune disease characterized by inflammation of multiple organs. The heart may be seriously involved.

Aim: To investigate the cardiac involvement in patients diagnosed with SLE assessed from an echocardiographic view.

Methods: We retrospectively reviewed the records of 75 patients with diagnosis of SLE (based on the American College of Rheumatology criteria), without any comorbidity and who were referred to our echocardiography laboratory

between 2002 and 2019. All echocardiographic exams were carried by transthoracic way.

Result: Patients were female in 92% of cases. Mean age was 27.8 years (16-70 years). Echocardiography showed 17 cases (22%) of minim or moderate pericardial effusion, tamponade in 2 cases. Valvular abnormalities were observed in 19 cases (25%), this included thickening of valves in all cases associated to 6 cases of significant mitral regurgitation (>grade1) and 2 cases of Libman sacks mitral valve endocarditis. However, aortic involvement was noted only in 3 cases resulting in thickening and mild regurgitation. Myocardium was involved in 5 cases (6%) including dilated left ventricular in 3 cases and hypertrophy in 2 cases. High arterial pulmonary hypertension was reported in 4 cases (5%) with mean systolic pulmonary arterial pressure was 59 mmHg (38 -120 mmHg).

Conclusion: In agreement with previous reports, our study shows that pericardial effusion is the most frequent

HYPERTROPHIC CARDIOMYOPATHY IN INFANTS: AETIOLOGY, CLINICAL FEATURES AND OUTCOMES.

Rihab Ben Othman, Kaouther Hakim, Hela Msaad, Houda Ghardallou, Rahma Karmous, El Bardi Mouad, Khalil Oueghlani, Fatma Ouarda

Service de cardiologie pediatrique, hôpital la Rabta

Background: Hypertrophic cardiomyopathy (HCM) in infants may be the clinical presentation of several potentially serious diseases. Recognizing the spectrum of HCM, different signs and symptoms and natural history of HCM in infants is essential for optimal management of these patients. This study describes the clinical characteristics and outcomes of infants with HCM.

Methods and results: Twenty-seven infants with HCM presented at a median age of 3 months (range 0-12) in our pediatric cardiology department of the Rabta hospital from January 1999 to July 2020. Aetiology was: Inborn errors of metabolism (IEM) ($n=7$, 26%), RASopathy ($n=7$, 26%), idiopathic HCM ($n=13$, 48%). In those with idiopathic HCM, four patients had a family history of HCM. The clinical presentation at diagnosis was a cardiac murmur in 30% and symptoms of heart failure (HF) in 26% of cases. Echocardiographic data at diagnosis revealed median left ventricular maximal septal thickness (LVMST) z-score at $+4,6 [2,3 - 7,1]$. Concentric hypertrophy was noted in 73% of patients. An infant had concomitant dilated cardiomyopathy. Sixteen infants (62%) had no left ventricular outflow tract (LVOT) obstruction. Concomitant right ventricular (RV) hypertrophy was present in 45% of patients. During a mean follow-up of $4,6 \pm 5,5$ years, eight patients (30%) died. Mortality was most frequently sudden death ($n=5$, 63%). For patients who died during infancy, HF was the most frequent cause of death (60%). Risk of sudden death or major ventricular arrhythmia during follow up was associated

with a LVMST z-score > 6 at diagnosis (p=0,001).

Conclusions: HCM is a heterogeneous disease in infants. During infancy, HF is the most common cause of death, after these period, sudden death and major arrhythmic events are more frequent.

PRENATAL DIAGNOSIS OF CONGENITAL ATRIOVENTRICULAR BLOCK IN TUNISIA: HOW FAR HAVE WE COME?

Amine Boussema, Kaouthar Hakim, Khalil Oueghlani, Chiraz Lassoued, Hela Msaed, Fatma Ouarda

Service de cardiologie pédiatrique, hôpital la Rabta

Background: Congenital atrioventricular block (CAVB) is associated with high mortality. Early diagnosis, at fetal stage, is critical, allowing for emergent treatment in an appropriate tertiary care setting. Yet, little is known about the extent to which prenatal diagnosis is implemented in Tunisia. Our aim is to describe the changing trends in early diagnosis in our country.

Methods: We reviewed medical records of 29 children admitted to our institution, in whom CAVB was diagnosed either prenatally, at birth or within first days of life. They were split into 2 groups according to year of birth: 1980–1999 (n=14) and 2000–2020 (n=15). Term of diagnosis and birth, congenital heart disease (CHD), maternal autoimmune disorders and blood tests for antibodies, and pacemaker implantation were all checked for and compared between the two groups.

Results: Sex-ratio was 1.07. Median gestational age was 37 weeks (36 - 38). Prenatal diagnosis was made in 12 patients (41.4%), diagnosis at birth in 12 more patients, and within days of birth in 5 cases. Earliest prenatal diagnosis was at 22 weeks of amenorrhea. Prenatal diagnosis was more frequent in the younger patients group: 9 cases (60%) vs. 3 cases (21.4%), p=0.035. Autoimmune causes were at the forefront, with 12 cases (41.3%), while CHDs were found in 7 newborns (24.1%). Most neonates were asymptomatic (86.2%). However, 2 newborns were small for gestational age, 1 newborn presented with heart failure, and another had concomitant ventricular tachycardia. All had epicardial pacing. Median age insertion was 52 days (15.2-247.5). Delays for implantation were shorter but not significantly different between the two groups (p=0.238).

Conclusion: While prenatal diagnosis has shown significant progress over the last decades, there is considerable room for improvement as regards the delays of pacemaker implantation.

SUPRAVENTRICULAR TACHYCARDIA IN INFANTS AND CHILDREN

Lilia Laadhar, Kaouthar Hakim, Syrine Triki, Khalil Ouaghilani, Hela Msaed, Fatma Ouarda

Service de cardiopédiatrie, hôpital la Rabta

Introduction : Supraventricular tachycardia(SVT) is a very fast heart rhythm that does not follow the regular pathway from the atria to the ventricles. The majority of the clinically important SVT in otherwise healthy children is caused by the presence of an accessory electrical connection between the atrium and ventricle. The most common mechanism of supraventricular tachycardia is explained by a reentry phenomenon. It can happen at any age and can start and cease quickly. if it occurs early since antenatal life or in case of very fast heart rate without treatment, the ejection fraction may be affected.

Methods: A retrospective descriptive monocentric study included 60 patients from the Rabta Hospital's cardiopeadiatric department, meeting the ECG criteria for supraventricular Tachycardia, excluding atrial flutter, atrial tachycardia and atrial fibrillation, between 2016 and 2020.

Results : Age at diagnosis varied from birth to 3 years (median 3 months). 38 were boys (63.3%). All patients were referred by peadiatrician for an emergency consultation. 13 patients (21.6%) had hemodynamic instability and needed urgent cardioversion. Difficulty of feeding by 7 patients (11.6%) and Breathlessness by 3 (5%) of them, in the majority of patients (61.9%), no symptoms were noticed. For ECG findings, Atrioventricular Reciprocating Tachycardia (AVRT) was diagnosed in 22 patients and direct signs of accessory pathway was found in 12 (55%) of ECGs, 6 patients had Permanent Reciprocating Junctional Tachycardia (PJRT), and no direct signs of accessory pathway in 12 lead-ECG was found in 32 (53.3%) ECGs. For the heart structure, five patients had congenital heart disease (8.3%): 2 of them had Congenitally corrected transposition of the great arteries and 3 had Ebstein's anomaly, the remaining patients (91.7%) had normal heart. Arrhythmia-induced cardiomyopathy with reduced ejection fraction was diagnosed in 18 patients (30%) who received medical treatment of heart failure.

Conclusion : Although the course of Supraventricular tachycardia (SVT) in infants is usually benign, sometimes, It may be mal tolerated and lead to heart failure with reduction of the ejection fraction induced by the sustained tachycardia and assynchrony. Therefore, an early diagnosis- antenatally in most cases- and finding the accessory pathway are warranted, cause the majority of SVT that presents in infancy can resolve by a few months to a year of life. If not, Radiofrequency ablation may be required.

MORBI-MORTALITY AND PATENCY OF FEMORO-FEMORAL BYPASSES IN THE UPPER THIGH FOR HEMODIALYSIS: 48 OPERATED CASES

Yassine Khadhar¹, Sobhi Mleyhi¹, Fatma Aouini², B Melek en Mrad¹, Nabil Ben Romdhane², Raouf Denguir¹

1. Service de chirurgie cardiovasculaire, hôpital la Rabta
2. Service de chirurgie vasculaire, hôpital Militaire Tunis

Background: There are nowadays an increase in the life expectancy of hemodialysed patients and a consequent exhaustion of the venous capital in the upper limbs, hence the use in some cases of vascular accesses in the lower extremities. The aim of this study was to evaluate the efficiency of prosthetic femoro-femoral arteriovenous bypasses in the upper thigh in terms of patency and postoperative morbidity and to study the factors that may influence them.

Methods: Our study was a descriptive, retrospective and longitudinal study of 42 patients who had 48 prosthetic vascular accesses for hemodialysis in the upper thigh. These patients were operated in the department of vascular surgery and organs transplantation of the military hospital of Tunis. The results were judged in terms of early and late morbidity and primary, assisted primary and secondary patencies.

Results: The mean age was 63 years with a slight male predominance (55%). Infection was the most common early morbidity (10%) while thrombosis was the most common late morbidity (49%). Early and late mortalities were estimated at 2% and 49%, respectively. The primary patency rates at one, 12 and 24 months were 96, 79 and 56%. Primary assisted patency rates were 96% at one month, 81% at 12 months, and 66% at 24 months. Secondary patency rates were 96%, 86% and 69% at one, 12 and 24 months. Dyslipidemia was the most influencing factor in both early and late thrombosis but it wasn't statistically significant. Obesity was the most important factor influencing early infection and this relation was statistically significant. Obesity was also the main predictor of late infection, without being statistically significant.

Conclusion: Even though associated to a significant morbidity, prosthetic femoro-femoral bypasses for hemodialysis represent an interesting alternative in case of exhaustion of the accesses in the upper limbs with satisfactory permeability rates.

WHICH DISEASE IS RESPONSIBLE OF MORE PRONOUNCED SUBCLINICAL LV DYSFUNCTION: HYPERTROPHIC CARDIOMYOPATHY OR ARTERIAL HYPERTENSION?

Karima Taamallah, Sana Hamdi, Sarra Chenik, Yassine Jabloun, Abdeddayem Haggui, Nadhem Hajlaoui, Wafa Fehri
Service de cardiologie, hôpital Militaire Tunis, Tunisia.

Introduction: The objective of the present study was to compare the degree of the subclinical LV dysfunction between hypertensive patients and patients with HCM with normal LV function.

Methods: Prospective case-control study was carried out on 50 patients (32male/18female) with HCM (25 patients: group

1) and HT with LV hypertrophy (25 patients: group 2). Patients in the two groups were matched of age- and gender and were comparable for most of clinical variables. No significant difference between the two groups regarding LV mass. Conventional echocardiographic Doppler study, tissue Doppler imaging, and 2D speckle tracking imaging were performed

Results: The mean age was 44.17 ± 12.5 years. There was no significant difference in the global LV ejection fraction (LVEF) between the two groups ($p=0.12$). The mean size of the interventricular septum was respectively 16.43 ± 1.89 mm in group 1 and 15.5 ± 3.31 (13-20) in group 2, the tele-diastolic diameter of LV was significantly low in patients with HCM (47.56 ± 6.16 mm vs 48.12 ± 2.39 $p=0.02$). GLS was significantly attenuated in patients with CMH (-12.73 ± 2.43 , extremes -5.7 - 20.2% in the group 1 vs $-13.57 \pm 4.045\%$ in the group 2) ($p < 0.001$). No correlation was found between the size of the interventricular septum and GLS in the two groups.

Conclusion: subclinical LV dysfunction is more pronounced in patients with HCM than hypertensive patients, this might be due to myocardial fibrosis.

EARLY DETECTION OF SUBCLINICAL LV DYSFUNCTION IN PATIENTS WITH DIABETES MELLITUS: THE ROLE OF 2D STRAIN

Karima Taamallah, Amira Talhaoui, Sarra Chenik, Yassine Jabloun, Abdeddayem Haggui, Nadhem Hajlaoui, Wafa Fehri
Service de cardiologie, Hôpital Militaire Tunis

Background: The relationship between diabetes mellitus (DM) and left ventricular (LV) dysfunction is established. The purpose of this study was to demonstrate a subclinical impaired LV function in patients with DM. the relationship between subclinical LV dysfunction and glycemic control and diabetes duration has also been assessed.

Methods: Standard echocardiography, tissue Doppler imaging, and two-dimensional strain analysis were performed prospectively in 30 patients with type 2 DM (DM group) with normal standard (normal LV size and function) echocardiography. Patients with valvular disease, systemic arterial hypertension, pulmonary disease, structural heart disease, atrial fibrillation or other rhythm disturbances and obesity were not included in this study. Only patients with a normal coronary angiogram or ischemia test, to be sure that there is no myocardial ischemia, were included. The results were compared to those from 40 age- and sex-matched healthy subjects.

Results: There were no significant differences between the two groups in LV ejection fraction, LV diameters and left atrial area and volume. The E/A ratio was significantly decreased in DM group ($p < 0.05$). E/é ratio was significantly higher in DM group ($p=0.02$). Left ventricular global longitudinal strain (LV GLS) was

significantly lower in DM group ($-23.06 \pm 3.22\%$ vs. $-16.23 \pm 2.64\%$, $p < .001$). LV GLS was correlated with diabetes duration ($r = -0.31$, $P < .001$) and glycated hemoglobin (HbA1c) ($r = 0.72$, $P < .$

STRAIN OF RIGHT VENTRICLE IN PATIENTS HAVING HCM

Marwa Ben Dou Dou, Karima Tamallah, Houaida Mahfoudhi, Abdeddayem Hagui, Nadhem Hajlaoui, Wafa Fehri

Service de cardiologie, hôpital Militaire Tunis

Introduction: Hypertrophic cardiomyopathy leads to right ventricle dysfunction as a consequence of direct extension of the disease or secondary to left ventricle dysfunction. The strain is an echographic modality to evaluate intrinsic dysfunction of ventricles in the early stage of the disease.

Methods : This is a transversal study enrolling 31 patients diagnosed with HCM and 50 healthy subjects. A standard doppler echocardiography to study right ventricle function was carried out in the two groups and evaluation of systolic function by the speckel tracking was made.

Results: A significant difference existed between the two groups concerning global longitudinal strain of right ventricle (-14.22 ± 5.6 vs -26.02 ± 2.09 ; $p=0.00$). The strain of the free wall of VD was more impaired in the group of patients (-15.91 ± 7.19 vs -28.2 ± 1.6 ; $p=0.00$). The group of patients had a lower longitudinal strain of interventricular septum in comparison with the control group (-13.19 ± 6.79 vs -23.26 ± 14.35 ; $p=0.001$). A positive correlation was found between the strain of the free wall of VD and the TAPSE ($r=0.48$; $p=0.019$), the S wave of VD ($r=0.88$; $p=0.00$) and the shortening fraction of VD ($r=0.61$; $p=0.001$).

Conclusion: Strain is an innovative method for estimating impairment of systolic right ventricle function in patients with HCM with normal standard ultrasound parameters with good correlation.

ASSESSMENT OF LONG-TERM OUTCOME OF ISTHMUS DEPENDANT ATRIAL FLUTTER AFTER RADIOFREQUENCY ABLATION IN THE ELDERLY

Abdeddayem Haggui¹, Mariem Ghardallou², Taha Yassine Jabloun¹, Aymen Noamen¹, Sarra Chenik¹, Haythem Raddaoui¹, Chedia Chourabi¹, Houaida Mahfoudhi¹, Karima Taamallah¹, Nadhem Hajlaoui¹, Wafa Fehri¹

1. *Service de cardiologie, hôpital Militaire Tunis*
2. *Service de médecine communautaire, hôpital Farhat Hached Sousse*

Background: Typical atrial flutter is a macroreentrant supraventricular tachycardia located in the right atrium. It shares with atrial fibrillation the same risk factors, and its incidence increases with age. Radiofrequency (RF) ablation is currently the first-line treatment for this arrhythmia, and the long-term success rate is high. Atrial flutter recurrence and atrial fibrillation

are though long-term risks after successful ablation. Post ablation atrial fibrillation is particularly frequent in the elderly.

The aim of this study was to assess the long-term outcome of isthmodependant atrial flutter after successful RF ablation in the elderly.

Methods : We carried out a cross-sectional study in the Cardiology department of the Military hospital between June 2007 and June 2018. We included all patients aged over 65 years who had developed isthmus dependant atrial flutter and who underwent successful RF ablation.

Results : A total of 62 patients were included in this study. The mean age was 72.7 ± 5.9 years. A male predominance was noticed (Sex Ratio 4/1). The prevalence of cardiovascular risk factors was 47.8% (smoking 67.7%, arterial hypertension 61.3%, diabetes mellitus 33.9%). The mean CHADS2VASC score was 3.33 ± 1.96 . This score was ≥ 2 in 87% of the cases. The acute success rate was 91.9%. Only four complications were reported. After a mean post-ablation follow up of 51.9 ± 0.2 months, atrial flutter recurrence occurred in 14.5% of the cases. The mean time to onset of flutter recurrence was 37.2 ± 30 months. Post ablation atrial fibrillation was noticed in 21% of patients—the mean time to onset of AF after ablation was 27.6 ± 18 months. Univariate analysis of the association between atrial flutter recurrence and post-ablation AF and predictor factors of the occurrence of these events in the long term follow up showed a non-statistical significant correlation. This may be explained at least partly by the small size of the sample. However, we noticed that the occurrence of AF after ablation was more common in patients with underlying heart disease and in patients with a higher CHADS2VASC score.

Conclusion : RF ablation of atrial flutter is a safe and effective technique also in the elderly. The risk of occurrence of atrial fibrillation during long term follow up is particularly high because of cardiovascular burden and severe comorbidities usually encountered in this population. Long term maintenance of sinus rhythm implies then controlling cardiovascular risk factors.

THERAPEUTIC INERTIA OF ARTERIAL HYPERTENSION IN ELDERLY POPULATION

Amani Amorri, Fares Azaiez, Nour Cherif, Housseem Boukhili, Rami Tlili, Youssef Ben Ameer

Service de cardiologie, hôpital Mongi Slim Tunis

Background: Arterial hypertension is a major contributor to cardiovascular risk. Despite considerable progress in the management of arterial hypertension, a large proportion of hypertensive elderly subjects still have uncontrolled blood pressure. In addition to behavioral factors related to the patient (non-compliance), clinical inertia plays a key role in this phenomenon.

Methods: It is a prospective cross-sectional study including 100 patients aged 65 years or more, followed for arterial hypertension at the outpatient clinic of the hospital Mongi Slim, aiming to study the prevalence of therapeutic inertia in elderly subjects as well as its determinant factors in the management of arterial hypertension.

Results: The average age of our patients is 71.5 years old and the sex Ratio is 1/1. Among these patients, therapeutic inertia was observed in 30.95% of them and it was more observed in whom without social security coverage in 76.92%, which makes therapeutic adaptation more difficult. The justifications for not adapting the treatment were: 23.08% of patients who were noncompliant with their treatment, a reinforcement of the hygienic and dietary rules in 15.38% and the preference of the doctor to have a blood pressure profile before any therapeutic modification in 46.15%.

Conclusion: Certainly, therapeutic inertia is a limiting factor for the control of arterial hypertension. However, the lack of social security coverage and the noncompliance among the elderly make the task more difficult.

DIAGNOSTIC VALUE OF TRANSESOPHAGEAL ECHOCARDIOGRAPHY IN INFECTIVE ENDOCARDITIS

Ahlem Khannouch, Molka Louati, Hassan Alzain, Achref Hamdani, Sabrine Bousnina, Zeineb Ajra, Refaat Ghenni, Riadh Ben Hmida, Taha Ounissi, Zied Ibn Elhadj

Cardiology department, Mohamd Taher El Maamouri Hospital

Introduction: Transesophageal echocardiography (TEE), being an invasive examination but with a better sensitivity than transthoracic echocardiography (TTE), allows to have a better quality image and to confirm the diagnosis of infective endocarditis (IE), especially in case the TTE is normal or shows a doubtful image or in case the patient has bad echogenicity or an intracardiac device (prosthesis++, pace maker). Through this study, we aim to evaluate the role of TEE in the search for diagnostic criteria of infective endocarditis.

Methods: We conducted a retrospective study that included 74 patients on whom TEE was performed, between November 2019 and May 2021 at the cardiology department of Mohamed Taher El Maâmourî Hospital. We retained only those with suspected endocarditis. Patients were classified as having either low, intermediate, or high probability of endocarditis on the basis of clinical criteria.

Results: We identified 36 patients; 18 men and 18 women who underwent TEE in search for criteria of infective endocarditis (48% of all TEE performed in that period). No argument in favor of infective endocarditis was found in 25 patients (69%), the diagnosis of IE, however, was confirmed in 11 patients (31%). Of the 11 confirmed cases, 54% were cases of endocarditis on prosthesis.

Conclusion : The diagnostic value of TEE in detecting

vegetations is better than that of TTE, and its sensitivity and specificity exceed the 90%. Nevertheless, there are situations in which the detection of vegetations remains difficult, particularly, in the presence of intracardiac material. In these cases, the absence of echographic argument in favor of IE should rule out the diagnosis.

PERICARDIAL DISEASE DURING COVID 19

Wafa Fekih¹, Maha Ben Yedder¹, Wafa Medi¹, Jamel Elghoul¹, Iheb Ben Krayen², Mouâd El Bardi², Sami Milouchi², Afef Ben Dayekh³

1. *Service de pneumologie, hôpital régional de Medenine*
2. *Service de cardiologie, hôpital régional de Medenine*
3. *Service des urgences, hôpital régional de Medenine*

Background : Pericardial disease is described as a serious cardiac event that can happen in COVID19.

Aim : To identify the frequency and specificities of the pericardial disease among COVID19 patients.

Methods : We conducted a retrospective study including clinical and CT scan records of patients admitted for COVID19 in the pneumology department of Hbib Bourguiba hospital of Medenine between January 2021 and June 2021.

Results : Of 302 COVID19 patients with severe affection, 225 have had Chest CT scan from which 8 had pericardial disease divided into 4 men and 4 women with a mean age of 71±7. The main symptoms were dyspnoea (75%) followed by chest pain (50%). CT scan showed moderate, extensive and severe damage in 2, 4 and 1 case respectively. One patient was found with proximal and bilateral pulmonary embolism. The pericardial effusion was small (<10mm) in 5 cases and moderate (between 10 and 20 mm) in 2 cases. Transthoracic ultrasound done for 3 patients revealed a pericardial tamponade in 1 case and a moderate circumferential pericardial effusion in the others. In hospital evolution was favourable in 87% of cases with a mean length of stay of 13.4 days. One patient died and one patient needed non-invasive ventilation. A complete remission or subsidence of the pericardial effusion was found in 5 cases at the three month follow-up. Two patients were lost to follow-up.

Conclusion : Pericardial disease is one of the COVID-19 life-threatening manifestations which requires an early diagnose.

CARDIOVASCULAR COMORBIDITIES AND COVID 19

Wafa Fekih¹, Wafa Medi¹, Maha Ben Yedder¹, Jamel Elghoul¹, Alaaeddine Dali², Hichem Mtimet², Sami Milouchi², Afef Ben Dayekh³

1. *Service de pneumologie, hôpital regional de Medenine*
2. *Service de cardiologie, hôpital regional de Medenine*
3. *Service des Urgences, hôpital regional de Medenine*

Background: The ongoing pandemic of COVID-19 has created a global emergency. Clinical outcomes are worse in older individuals and patients with comorbidities.

Aim: To assess the characteristics of COVID-19 patients with cardiovascular comorbidities (CVC).

Methods: We retrospectively reviewed clinical and chest CT scan records of patients admitted with COVID-19 between January 2021 and June 2021 in the pneumology department of Hbib Bourguiba hospital of Medenine. Patients were divided into two groups: Group1 (G1): patients with CVC, Group 2 (G2): patients without CVC.

Results: A total of 300 patients was included. Of those, 147 (49%) were female, mean age \pm SD was 67.29 ± 14.71 . One hundred forty four (48%) patients had cardiovascular comorbidities (hypertension: 135 (45%), coronary vascular disease: 11 (3.7%), heart failure: 19 (6.3%)). The mean age of G1 was 71.79 ± 1.74 versus 63.14 ± 15.75 in G2 ($p < 0.001$). There was a female dominance in G1 (56.25% Vs 42.3%; $p = 0.01$) and more obesity ($IMC > 30 \text{Kg/m}^2$) (30.55% Vs 16.02%; $p = 0.005$). The chest CT showed more severe damage (CT scan percentage of lung involvement $> 50\%$) in G1 (80.9% Vs 69.1%; $p = 0.02$). However, no significant difference was found in death or discharge to the intensive care unit between the two groups (27.1% Vs 20.5%; $p = 0.11$) nor in the length of stay (11.55 Vs 12.85 days; $p = 0.21$).

Conclusion: This study shows that patients with CVC admitted for covid19 are more prone to develop severe lung damage.

ARTERIAL SWITCH OPERATION FOR THE CORRECTION OF TRANSPOSITION OF THE GREAT ARTERIES : ABOUT SIX CASES

Taieb Cherif, Bechir Ben Radhia, Khawla Nasser, Haifa Mtir, Chokri Kortas, Sofiane Jerbi, Imene Mgarrech

Service de chirurgie cardiovasculaire et thoracique, hôpital Sahloul Sousse

Background: Transposition of the great arteries is one of the most complex congenital heart defects for which surgical procedures had been developed over the years. The arterial switch operation (ASO) represents the most effective surgical procedure by restoring a normal anatomic and physiologic cardiac configuration. In this study, we aim to analyze our experience in the management and surgical attitude in neonates and to report the outcomes of the corrective repair

Methods: Medical records of 6 neonates who benefited from an arterial switch operation from Mars 2020 to July 2021 were reviewed and analyzed via a retrospective descriptive study to identify the clinical, operative, and postoperative characteristics.

Results: The mean age at operation was 10 days. The prenatal diagnosis was made for only four of the patients. The sex ratio was at 0.5. The mean weight at the time of surgery was 2.9 Kg. Three patients had a simple transposition of the great arteries, the other three had an associated ventricular septal defect. Two of the patients benefited from a Rashkind atrioseptostomy prior to surgery and all of them

were on PGE1 infusion. All the patients underwent a single-stage correction consisting of an arterial switch operation and correction of the associated malformations. Five of the patients required the use of central arteriovenous ECMO for difficulties of weaning off bypass and one patient required an urgent ECMO for a refractory cardiac arrest during the third post-operative day. All the patients required the use of inhaled nitric oxide and oral sildenafil to prevent pulmonary arterial hypertension crisis. The in-hospital mortality rate was 33.3%. One patient died of multisystemic organ failure due to sepsis and the other one died from severe cardiac dysfunction. One patient developed ventricular arrhythmias

Conclusion: The ASO is the standard of care for Transposition of the great arteries in neonates offering the opportunity for anatomic and physiologic correction. Surgery outcomes are promising with a high survival rate. Important questions regarding pre-operative status, surgical strategy, timing of surgery, and post-operative care remain. Long-term studies are necessary to monitor outcomes throughout the duration of life for children who benefited from the procedure.

SURGICAL MANAGEMENT AND OUTCOMES OF CARDIAC AND GREAT VESSELS ECHINOCOCCOSIS: A 16-YEAR EXPERIENCE

Marah Jamli, Taieb Cherif, Khaoula Nasser, Haifa Mtir, Chokri Kortas, Sofiane Jerbi, Imene Mgarrech

Service de chirurgie cardiovasculaire et thoracique, hôpital Sahloul Sousse

Background : Cardiac involvement is an uncommon presentation of hydatid disease. In this study, we aim to analyze the experience of surgical treatment of cardiac and great vessels echinococcosis in our cardiovascular and thoracic surgery department.

Methods : Through a 16-year period, from 2000 to 2015, 27 patients underwent surgery for cardiac and great vessels hydatid disease. The clinical, operative, and postoperative data were analyzed through this retrospective and descriptive study.

Results : Most of our patients came from a rural area. The most common symptom was chest pain. The diagnosis was mainly made by transthoracic echocardiography, which has shown the right ventricle as the most frequent location of the disease. All patients received surgical treatment under cardiopulmonary bypass, and only six surgeries were performed without crossclamping aorta. Inhospital mortality rate was 7.4%.

Conclusions : Cardiac hydatidosis is a rare but potentially serious condition whose treatment is mainly surgical even for asymptomatic patients owing to its possible fatal complications. The surgery outcomes are usually satisfactory. Follow-up examinations are highly recommended to detect recurrences.

CORRELATION BETWEEN THE SEVERITY OF CIRRHOSIS AND ELECTRO-ECHOCARDIOGRAPHIC PARAMETERS

Mehdi Slim, Ayoub Meddeb, Hela Kaddour, Nouha Mekki, Imene Amamou, Assil Achour, Safa Dardouri, Sami Ouannes, Imene Ben Ali, Sameh Ben Farhat, Aymen ElHraiech, Rim Gribaa, Elies Neffati

Service de cardiologie, hôpital Sahloul Sousse

Introduction: Cirrhotic cardiomyopathy (CCM) is currently emerging as a unique clinical entity occurring in cirrhosis, which is characterized by a constellation of structural, functional, and electrophysiological cardiac abnormalities. Its diagnosis is mainly based on echocardiography.

Methods: This is a cross-sectional study of patients followed for cirrhosis during the period from 2016 to 2017. Each patient underwent a clinical examination, an ECG and a cardiac ultrasound. The diagnosis of CCM was retained on the presence of systolic and / or diastolic dysfunction.

Results: During the study period, 76 cirrhotic were collected. The mean age of the patients was 54 ± 11.8 years with ranges ranging from 18 to 79 years. The study population consisted of 45 men (59% of patients) and 31 women (41%). The sex ratio (Male / Female) of 1.4. Twenty-two patients (29%) presented with one or more co-morbidity(s) associated with cirrhosis. It was mainly type 2 diabetes, found in 7 patients (9.2%). 11 patients were smokers. Occasional alcohol consumption was found in 6 patients. Cirrhosis was of viral origin in 35 cases (46%). Elsewhere, it was alcoholic cirrhosis, dysimmune cirrhosis, non-alcoholic steatohepatitis, and cryptogenic cirrhosis. Cirrhosis was classified as CHILD PUGH B in the majority of cases (44.7%). 9 patients (11.8%) had cirrhosis CHILD PUGH CA on ECG: the corrected QT was prolonged in 33 patients (43.5%). Based on the consensus diagnostic criteria of 2005, systolic dysfunction and diastolic dysfunction were present in 5.3% (n = 4) and 51.3% (n = 39), respectively. The prevalence of CCM was 53.9% (n = 41). Of all the echocardiographic parameters studied, only the volume of the left atrium was positively correlated with both CHILD PUGH score (p = 0.002) and MELD score (p = 0.004). There was also a positive correlation., statistically significant, between the QT interval and the two cirrhosis severity scores: MELD and CHILD PUGH.

Conclusion: Our study showed that CCM is a common condition affecting older, female patients with advanced hepatopathy. QT interval and LA volume were correlated with the severity of cirrhosis.

CLINICAL OUTCOME AFTER CARDIAC RESYNCHRONIZATION THERAPY PREDICTS SURVIVAL IN STRUCTURALLY NON-RESPONDER PATIENTS

Mehdi Slim, Marwen Kacem, Abdelaziz Jaouadi, Aymen ElHraiech, Imene Amamou, Ayoub Meddeb, Hela Kaddour, Saeb Ben Saad, Assil Achou, Sami Ouannes, Imene Ben Ali, Sameh Ben Farhat, Rim Gribaa, Elies Neffati

Service de cardiologie, hôpital Sahloul Sousse

Introduction: Clinical improvement was a primary endpoint in most of the major clinical trials that shaped the CRT paradigm, and regardless of left ventricle reverse remodeling its impact on survival is understudied particularly in non-responder patient group. Our aim is to assess the impact of clinical improvement on survival outcome of structurally non-responder patients.

Method and results: We analyzed 152 patients who underwent a successful CRT device implantation in the cardiology department of Sahloul University Hospital. After a variable duration of follow-up, patients were classified according to their echocardiographic response (Responders were defined as an increase in LVEF >5% and/or decrease of LVESV > 15% compared to baseline). Subsequently, non-responders were analyzed according to their clinical improvement (defined as a significant and stable reduction in NYHA class ≥ 1 class). Finally, 54 non-responder patients were identified and after a mean follow up of 54 months, 27 patients had a significant improvement in NYHA functional class. Survival outcome was better in patients with clinical improvement in univariate (p= 0.025) and multivariate analysis (HR=0.51, CI [0.27; 0.96], p= 0.035).

Conclusion: A significant and durable clinical improvement in non-responder patients has demonstrated a strong impact on survival, thereby, a clinical response may be an independent predictor of survival in this population.

DOES MYOCARDIAL BRIDGE HAVE AN IMPACT ON MYOCARDIAL PERFUSION AND WHAT ARE THE CLINICAL OUTCOMES IN PATIENTS WITHOUT CORONARY ATHEROSCLEROSIS?

Mehdi Slim, Safa Dardouri, Imene Amamou, Ayoub Meddeb, Hela Kaddour, Marwen Kacem, Saeb Ben Saad, Safa Dardouri, Imene Amamou, Sami Ouannes, Imene Ben Ali, Sameh Ben Farhat, Aymen ElHraiech, Rim Gribaa, Elies Neffati

Service de cardiologie, hôpital Sahloul Sousse

Introduction: Myocardial bridging is defined as a congenital abnormality of the epicardial coronary artery where a portion of the artery courses into the cardiac muscle. This condition is relatively a frequent finding in coronary angiography with a prevalence of 0.5 to 12 %. During systole, this segment of the artery goes under a compression which impedes its flow and may cause myocardial ischemia. While the majority are asymptomatic, numerous studies have documented the association between MB, ventricular arrhythmias, myocardial infarction and sudden cardiac death. We aim by this work to assess the impact of MB on myocardial perfusion with the consequent clinical outcomes and to study the long-term evolution after medical treatment.

Methods: A review of coronary angiographies of patients

diagnosed as having an ischemic heart disease was made between 2007 and 2017 in our center. The long-term follow-up of patients with myocardial bridging and systolic compression of the left anterior descending coronary artery was analyzed. Data were collected by reviewing medical records and completed by phone interviews.

Results: Among 169 patients diagnosed with MB, 89 (52%) of them had an isolated MB. Focusing on these patients with isolated MB, the mean age was 47 years with a slight male predominance (56%). Major cardiovascular risk factors were present in 27%. The clinical presentation was essentially stable angina (52%) and acute coronary syndromes (35%). Electrocardiogram signs of myocardial ischemia were present in 52%. Left Ventricular function was normal in 82% of patients. Stress test was performed in 21% of patients and came positive in 70% of the cases. The most common site was the middle segment of Left Anterior Descending artery (83%). Medical treatment was prescribed in all patients, consisting on beta-blockers (71%) or calcium channel blockers (29%). At the follow-up, 65% of patients presented a grade I-II CCS angina despite medical treatment. In only one case, percutaneous revascularization with stent implantation was performed leading to relief of symptoms. No deaths or myocardial infarctions were observed over a follow-up period.

Conclusion: MB may cause myocardial ischemia with a very variable clinical presentation. Medical treatment is not efficient in all of the cases. No randomized clinical trial data exists in the literature regarding options for medical, percutaneous or surgical management.

PULMONARY VALVE STENOSIS AND BALLOON VALVULOPLASTY: A 26-YEAR EXPERIENCE.

Rim Letaief, Imen Ben Ali, Elyes Neffati, Mehdi Slim, Sami Ouanes, Rym Gribaa, Aymen ElHraiech

Service de cardiologie, hôpital Sahloul Sousse

Background: Pulmonary balloon valvuloplasty (PBV) is currently the standard treatment of congenital valvular pulmonary stenosis (PS). But its results are linked to the experience of each center.

Objectives: Through this study, we aimed to present our experience with this the interventional technique and its long-term outcome (up to 26 years).

Methods: This retrospective study included patients with more than mild congenital PS even those with atrial septal defect (ASD) and patent foramen ovale (PFO) who underwent PBV in cardiology department of Sahloul, Tunisia from 1992 to 2018. Clinical profile, echocardiographic details, procedural data were studied. Then, the patients were clinically and echocardiographically reassessed at least 1 year after the procedure.

Results: PBV was performed in 132 patients (60.6%

males, 39.4% females) with a median age of 3.5 years, mostly (77.3%) for severe PS, including 34.8% patients with dysplastic pulmonary valve. The peak Doppler gradient was significantly reduced immediately after valvuloplasty (24 hours after) compared to the initial evaluation (from 84.9 + 27.7 mmHg to 44.5 + 24.7 mmHg, $p < 0.001$). Intervention was successful in 69.3% of cases. Long term follow-up concerned 129 patients, with a median duration of 2 years (range: 1 to 26 years). Echocardiographic parameters indicated excellent results of this technique in relieving the transpulmonary gradient with a success rate of 65.1% (residual gradient < 36 mmHg) of which 50% were performed on dysplastic valves. Indeed, the gradient decreased from 83.7 + 26.6 mmHg (range 57.1 - 110.3 mmHg) before PBV to 37.3 + 26.2 mmHg (range 11.1 - 63.5 mmHg) at latest follow-up ($p < 0.0001$). Mild pulmonary regurgitation (PR) was observed in 25.6% at late follow up. Restenosis was noted in 18 patients (14%), four of them (3%) underwent a second valvuloplasty. Complications were exclusively minor (1.5%). We identified only one post-procedural death related to severe pulmonary embolism.

Conclusion: PBV is an effective treatment for congenital valvular PS with encouraging results for dysplastic valve dilatation.