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40th

Kenya Cardiac Society Annual Scientific Congress



Disclaimer

The Abstracts for Kenya Cardiac Society were reviewed by an independent Abstract Review Committee appointed by the Congress Organizing Committee and not by the Editor-in-Chief, Regional Editors or reviewers of the *Cardiovascular Journal of Africa*. Only accepted and presented abstracts are published.



Dear Readers

It is with great pleasure and enthusiasm that we present to you the abstract booklet for the 40th Kenya Cardiac Society Annual Scientific Congress held on 26 – 29th July at the Sarova Whitesands Hotel, Mombasa, Kenya. This booklet serves as a compilation of the diverse and cutting-edge research that were submitted to the congress.

This congress serves as a platform for the exchange of ideas, collaboration, and the dissemination of knowledge from Kenya and across the region on CVDs. This year's event has attracted an impressive array of local and international health professionals, researchers, industry professionals, and students. The resulting diversity of perspectives, expertise, and experiences provides a vibrant and enriching intellectual environment.

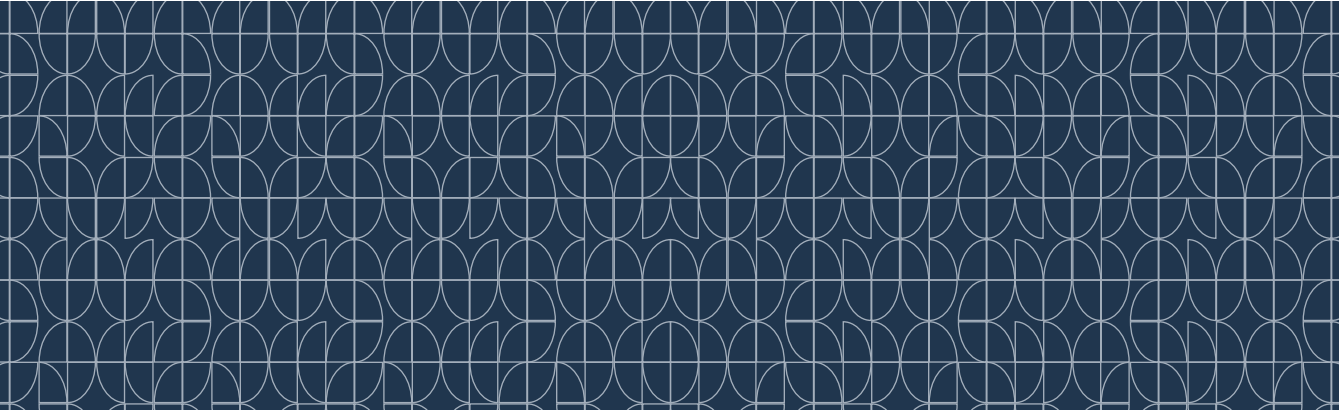
We would like to extend our heartfelt appreciation to all the authors who submitted their abstracts for consideration. We acknowledge the tireless efforts and unwavering dedication of the contributors to advancing knowledge in the field of cardiovascular diseases (CVDs). We would also like to express our gratitude to the reviewers and members of the organizing committee who dedicated their time and expertise to ensure the quality and relevance of the abstracts included in this booklet.

Finally, we would like to extend our warmest welcome to all the congress attendees. We hope that your participation in this event will be an enriching and memorable experience, filled with new connections, stimulating discussions, and inspiring discoveries.

Once again, we express our gratitude to all who have contributed to the abstract booklet and the success of the 40th Kenya Cardiac Society Annual Scientific Congress. We wish you an inspiring and rewarding journey as you explore the abstracts and engage in the exchange of knowledge at this remarkable event.

Sincerely,

Dr. Felix Barasa
Chair, Abstract review Committee



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Submission ID: 1

SPECTRUM OF CAUSES OF ISOLATED (PURE) AORTIC REGURGITATION AT A SOUTH AFRICAN PUBLIC SECTOR TERTIARY CARE INSTITUTION

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2. DEPARTMENT OF MEDICINE, DIVISION OF CARDIOLOGY, UNIVERSITY OF CAPE TOWN AND GROOTE SCHUUR HOSPITAL, CAPE TOWN, SOUTH AFRICA
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4. SCHOOL OF PUBLIC HEALTH & FAMILY MEDICINE, UNIVERSITY OF CAPE TOWN, SOUTH AFRICA.

Background

Aortic Regurgitation (AR) is due to primary abnormalities of the aortic valve or peri-valvular apparatus and structures such as the aortic root and the ascending aorta. The etiology and mechanisms of AR is relatively well described in Europe and North America, little information exists about their spectrum and frequency in a South African context. The aims of this study were to determine the spectrum of disorders that cause isolated AR and their proportion, the predominant mechanisms of isolated AR and the accuracy of pre-op determination of etiology by clinical and imaging evaluation.

Methods

This is a retrospective review of 141 hospital records of patients who had aortic valve replacement (AVR) for isolated AR from Jan 2003 to June 2018 at Groote Schuur Hospital (GSH). For this study the etiology and pathological mechanism was confirmed by macroscopic examination at surgery and pathological examination of the explanted valve was confirmed by preoperative clinical and echocardiographic findings or pathological examination where available.

In the absence of histology, clinical, echocardiographic, and macroscopic examination were used to determine etiology.

Results

Rheumatic heart disease 32.6% (46/141) was the most common disease causing AR in our study. The mean age of the cohort was 43 years (29-57) with a male predominance of 63.1% (89/141). Preoperative evaluation with clinical and echocardiographic assessment was able to accurately identify the mechanisms of 95.7% (135/141) the patients. Five predominant categories of mechanisms were found.

Conclusion

In a SA cohort, we show that AR in our setting is a disease of young patients, the majority of which is caused by RHD. Other important causes in our setting included IE, HPT, aortitis and bicuspid valves. These findings evaluating the spectrum of causes of isolated AR in an urban African environment are in contrast to those in the global north where isolated AR is predominantly degenerative valve disease, BAV or of unknown etiology. With many of the patients referred in the north being older patients (55-70).

Demographics, comorbidities, clinical presentation, echocardiographic findings and causes of AR

Variable	Total (N=141)	Aortic Root Dilatation (N=38)	Aortic Dissection (N=14)	Bicuspid Aortic Valve (N=2)	Degenerative Valve Disease (N=6)
Demographics					
Sex					
Male	89 (63.1)	23 (60.5)	8 (57.1)	0	4 (66.7)
Female	52 (36.9)	15 (39.5)	6 (42.9)	2 (100)	2 (33.3)
Age (years)	43.1 (±14)	45.0 (±15)	44.9 (±13)	44.0 (±17)	43.1 (±19)
Medical history					
Hypertension	61 (43.3)	20 (52.6)	8 (57.1)L	1 (50.0)	2 (33.3)
Diabetes mellitus	2 (1.4)	0	0	0	1 (16.7)
Dyslipidaemia	13 (9.2)	5 (13.2)	2 (14.3)	1 (50.0)	1 (16.7)
Coronary Heart Disease	6 (4.3)	3 (7.9)	0	1 (50.0)	0
CKD	7 (5.0)	2 (5.3)	0	0	1 (16.7)
COPD	8 (5.7)	4 (10.5)	0	0	1 (16.7)
HIV positive	21 (16.9)	5 (15.6)	1 (8.3)	1 (50.0)	0
On HAART	13 (61.9)	3 (60.0)	1 (100)	1 (100)	-
CD4 count	344 (259-545)	173 (96-357)	490 (490)	239 (239)	-
Syphilis reactive	12 (8.5)	4 (10.5)	1 (7.1)	0	1 (16.7)
Clinical presentation					
NYHA					
I	15 (10.8)	5 (13.9)	2 (14.3)	0	0
II	45 (32.4)	14 (38.9)	5 (35.7)	2 (100)	2 (33.3)
III	65 (46.8)	15 (41.7)	7 (50.0)	0	1 (16.7)
IV	14 (10.1)	2 (5.6)	0	0	3 (50.0)
Heart failure	104 (73.8)	25 (65.8)	9 (64.3)	1 (50.0)	6 (100)
Pulmonary Oedema	33 (23.4)	6 (15.8)	3 (21.4)	0	4 (66.7)
Aortic valve morphology					
Bicuspid	11 (7.9)	2 (5.4)	1 (7.7)	1 (50.0)	1 (16.7)
Tricuspid	128 (92.1)	35 (94.6)	12 (92.3)	1 (50.0)	5 (83.3)
Presence of minimal/functional MR	97 (71.9)	29 (80.6)	6 (50.0)	1 (50.0)	5 (83.3)
Presence of mild AS	12 (8.8)	4 (11.1)	1 (8.3)	0	1 (16.7)
AoVPG <35 mmHg	91 (64.5)	23 (60.5)	4 (28.6)	2 (100)	4 (66.7)
Grading of AR					
Mild	2 (1.4)	0	1 (7.1)	0	0
Moderate	18 (12.8)	8 (21.1)	1 (7.1)	1 (50.0)	2 (33.3)
Severe	121 (85.8)	30 (79.0)	12 (85.7)	1 (50.0)	4 (66.7)
Surgical Intervention					
Mechanical prosthesis	88 (68.2)	21 (58.3)	6 (46.2)	1 (50.0)	2 (40.0)
Bioprosthesis	24 (18.6)	5 (13.9)	1 (7.7)	1 (50.0)	2 (40.0)
David's procedure	17 (13.2)	10 (27.8)	6 (46.2)	0	1 (20.0)

Submission ID: 2

FACTORS ASSOCIATED WITH NON-UPTAKE OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR AMONG ELIGIBLE PATIENTS IN KENYA

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Background

The safety and efficacy of Implantable Cardioverter-Defibrillator (ICD) implantation in both primary and secondary prevention of Sudden Cardiac Death (SCD) in at-risk populations is well established. ICD implantation rates remain low particularly in Africa with a paucity of data regarding factors associated with non-uptake and reasons for implant refusal. The study's aim was to characterize these factors and identify reasons for ICD refusal. Understanding these factors and reasons for non-implantation will provide the opportunity to optimize ICD uptake among eligible patients hence reducing sudden cardiac arrest.

Methods

This was a retrospective study of heart failure patients seen from 2018 to 2020. Demographics, etiology of heart failure, comorbidities, NYHA functional class, primary physician, and insurance status were abstracted. Logistics regression models were used to compare the ICD recipient and ICD non-recipient groups to determine predictors for non-uptake.

Results

Of the 206 ICD device-eligible patients, only 69 (33.5%) had an ICD implantation. Compared to ICD recipients, ICD non-recipients were more likely to be of African race (91.2% vs. 79.7%; $p=0.019$) and rural dwellers (18.7% vs 8.2%; $p=0.031$). In multivariate analysis, factors independently associated with non-uptake were lack of private insurance (42.3% vs 63.8%; $p=0.005$), non-cardiology physician (16.1% vs 5.8%; $p=0.045$), and non-ischemic cardiomyopathy (54.7% vs 36.4% $p=0.014$). The most common reason for refusal of ICD implantation was the inability to pay for the device.

Conclusion

ICDs are underutilized in Kenya. Certain patient and practice factors including lack of private insurance, non-cardiology primary physician, and non-ischemic cardiomyopathy, were independently associated with non-uptake of ICD. The findings of this study hold significance in enhancing the utilization of ICDs in sub-Saharan Africa.

Submission ID: 3

DIAGNOSIS OF CHILDREN ADMITTED OVER A 5-YEAR PERIOD WITH CONGENITAL HEART DISEASE AT KENYATTA NATIONAL HOSPITAL

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Background

Congenital Heart disease (CHD) are clinically significant structural heart disease present at birth. CHD is found in 8-12 babies per 1,000 live births. Common CHDs include atrial septal defects, ventricular septal defects, Patent Ductus Arteriosus, pulmonary stenosis, coarctation of aorta and tetralogy of Fallot. The number of patients with their CHDs admitted at KNH hasn't been documented. Objective: To establish the clinical diagnosis of children admitted in KNH with CHD from 1st January 2016 to December 2021.

Methodology

Retrospective review of patient records for period 1st January 2016 to December 2021. We collected data for all patients diagnosed with congenital heart disease for patients aged below 18 years who

had ever been admitted at Kenyatta National Hospital. Descriptive statistics were generated for social demographic and the clinical diagnosis. Continuous data was summarized with appropriate measures of central tendency and distribution.

Results

We reviewed 1,247 medical records for children with CHDs. A majority (1,102 -88.4%) were aged three years or below. There were slightly more males (730 - 58.5%). Most of the children were referred for cardiac evaluation (858 - 68.8%). Nairobi county had the highest number of patients (509 - 40.8%). The common presenting were respiratory symptoms (difficulties in breathing - 906, 72.7%, cough - 57, 17.3% and difficulties in feeding/breastfeeding - 169, 13.6%). The common acyanotic CHDs were PDA (435 - 34.9%), VSD (365 - 29.2%) and ASD (267 - 21.4%) while the common cyanotic CHDs were ToF (92 - 7.3%) and DORV (18 - 1.4%).

Conclusion

The common CHDs seen were VSD, PDA and ASD for acyanotic while ToF and DORV were the common cyanotic CHDs.

Submission ID: 4

TREADING THE PATIENT PATHWAY: HEALTHY HEART AFRICA APPROACH TO AWARENESS, SCREENING, DIAGNOSIS AND TREATMENT OF HYPERTENSION AT FAITH-BASED HEALTH FACILITIES IN KENYA.

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Background

AstraZeneca's HHA program launched in 2014, is a sustainability access program designed to contribute to prevention and control of hypertension and decreasing the burden of cardiovascular diseases in Africa. HHA is delivered in partnership with MOH-Kenya and Kenya Conference of Catholic Bishops and aspires to reach 10 million people with elevated blood pressure across Sub-Saharan Africa by 2025.

Methods

Focusing on strengthening the patient pathway, CHVs and relevant healthcare providers were trained in awareness creation and education with provision of IEC materials, hypertension protocols and registers to track patient journey and outcomes. Screening is done by CHVs at the community or Healthcare Providers at triage to identify, refer and link patients with elevated blood pressure for diagnosis and treatment. Psychosocial support groups are formed for adherence and retention.

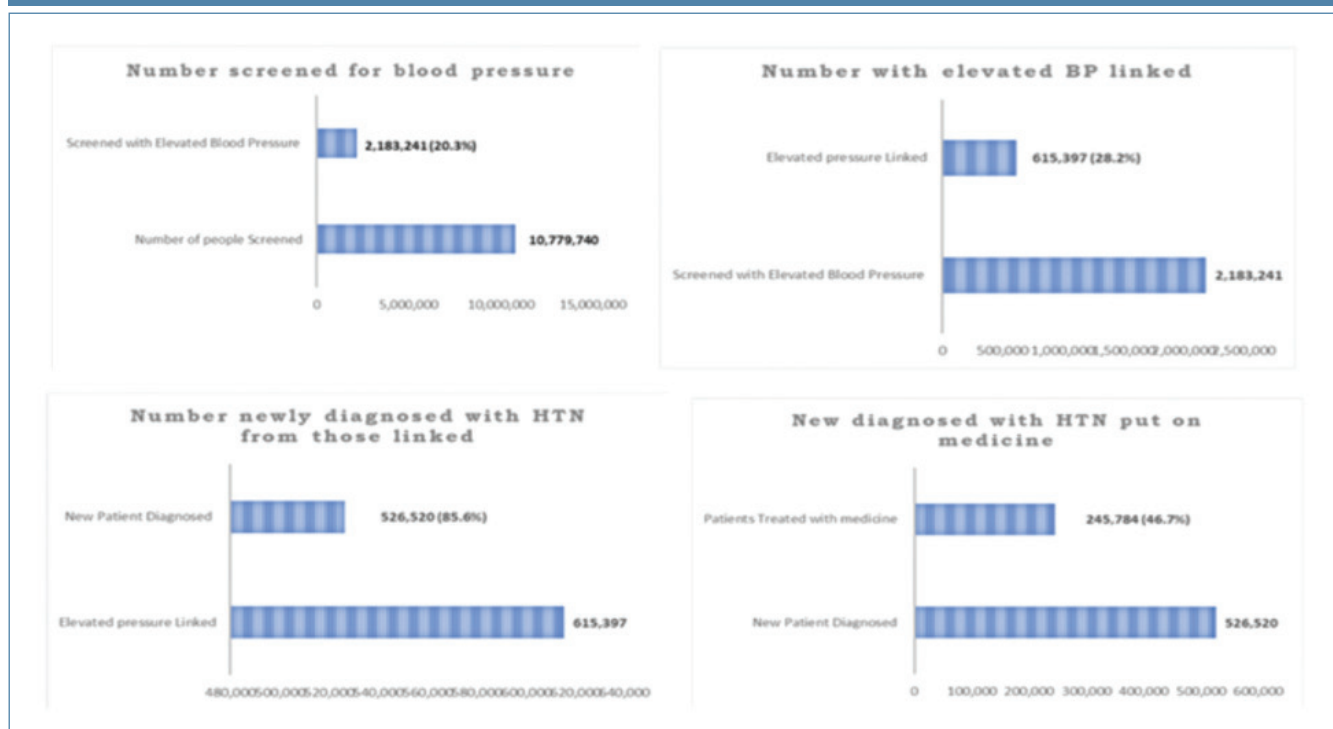
Results

From January 2016 to February 2023, 10,779,740 people were screened, 2,183,241 (20.3%) were found with elevated blood pressure 615,397 (28.2%) individuals with elevated blood pressure were referred. 421,736 (85.6%) were newly diagnosed with hypertension and linked to care, 208,000 (46.7%) initiated on treatment.

Conclusion

HHA pathway demonstrated successful implementation of hypertension interventions within the primary care setting in Kenya. The initiative was able to identify high numbers of hypertensive patients for care. HHA approach, demonstrates mechanisms to attain early detection, prevention and treatment of hypertension in Kenya.

HHA patient pathway from January 2016 to February 2023



Submission ID: 5

CASE STUDY WITH AN UNUSUAL CAUSE FOR PAROXYSMAL AFIB

MAZAHAR JAFFER, P K J PATEL

Introduction

More than half of the life-threatening arrhythmias are labelled idiopathic without clear identifiable cause. Since 2017, there are studies confirming a large proportion of these cases have an autoimmune origin. There is an estimated global prevalence of 10% for autoimmune disease in general, with an approximate three-fold increased risk in arrhythmias within patients suffering from the same.

Method

An 80-year-old woman who has been suffering from recurrent atopic reactions including recurrent respiratory symptoms, unusual rashes, significant orthostatic symptoms, and a long-standing incidences of recurrent paroxysmal atrial fibrillation attacks, for which she could not use most antiarrhythmic drugs due to atopic reactions and has significant muscle wasting due to prolonged beta blocker usage. She underwent thrombotic CVA and was started on aspirin. She declined use of LABA/ICS for her symptoms and had been on long term follow up with a cardiologist for her symptoms. She underwent testing for autoimmune disease and found multiple markers that led to her commencing of Baricitinib. The results of the same led to a relative resolution of her antibody levels, and most of her symptoms as well as a lack of arrhythmia incidents over a 3-month period.

Results

Control of the autoimmune condition was associated with control of the arrhythmic events without additional use of antiarrhythmic drugs in this case.

Conclusion

It is worth screening and controlling for Autoimmune disease in all patients identified with arrhythmia as part of its management of the same.

Submission ID: 6

SURGICAL TREATMENT OF HOCM: A KENYAN EXPERIENCE

DR. PREMANAND PONOTH

THE KAREN HOSPITAL, NAIROBI

Background

Septal myectomy is currently considered the safest and most durable way to reduce obstruction caused by Hypertrophic Obstructive Cardiomyopathy (HOCM). HOCM is a genetic disorder of the myocardium, characterized by marked myocardial hypertrophy that may lead to the development of symptoms such as dyspnea, angina pectoris, or stress-induced syncope, with an increased risk of sudden cardiac death, due to obstruction of the left ventricular outflow tract.

Methods

Between 2020 to 2023 we had 2 cases with hypertrophic obstructive cardiomyopathy which was subjected for septal myomectomy. Age varied between 40 -60.M:F ratio 1:1. Both had significant LVOT mean gradient of more than 60mmof Hg with associated LVH. Septal thickness was more than 25 mm. One patient has mild Systolic Anterior Motion of the Mitral Valve (SAM).

Results

Both the patient underwent septal myomectomy through aortic approach on Cardio Pulmonary bypass. Procedure was uneventful. Post OP gradient across aortic valve was less than 25mm of Hg at the time of discharge. One patients came back after 2 weeks with fever associated with cough and dyspnoea. On investigation he had massive left pleural effusion, which on ICD drainage, found to be haemorrhagic. This patient has covid pneumonia few months before the surgery, and a provisional working diagnosis of covid reinfection was made as HRCT showed infiltrative lesion. He died on the 2nd day after readmission. The other patient is doing well and is on regular follow up.

Conclusion

HOCM can cause the leaflets of the mitral valve elongated.

Repairing the valve (Horizontal Plication), removal of residual or extra portions of the mitral valve should be done. Surgical septal myectomy is the therapeutic gold standard for the treatment of drug-refractory disabling symptoms in HOCM caused by LVOT obstruction. Alcohol septal ablation for HOCM has been proposed as a less-invasive alternative to surgical myectomy, although its role in the management of HOCM associated with SAM requires further investigations.

Submission ID: 7

SUBAORTIC STENOSIS: A GRATIFYING SURGICAL TREATMENT FOR A RARE AILMENT

DR.PREMANAND PONOTH

THE KAREN HOSPITAL, NAIROBI

Background

This is a rare heart disease with an unclear etiology and variable clinical presentation. which result in left ventricular outflow tract obstruction. The etiology of the stenosis ranges from a discrete subaortic membrane to tunnel type narrowing of the entire left ventricular outflow tract which results in left ventricular outflow obstruction. Reports of a familial incidence, suggest a genetic predisposition. Discrete subaortic stenosis (DSS) is the most basic form. SAS usually develops during the first decade of life and might appear as an isolated lesion or in association.

Methods

Between 2022 and 2023 we had two cases of subaortic stenosis of varying pathology. The pediatric patient of 4 years had discrete sub aortic membrane causing palpitation, which was diagnosed on cardiac evaluation. The child had mild MR, normal LV. The adult patient aged 28 years has subaortic ridge causing chest discomfort with DOE, NYHA class III. The peak gradient across the aortic valve was 90mm of Hg, the echo evaluation was otherwise normal. Both the patient had resection of the subaortic pathology on cardiopulmonary bypass and had uneventful recovery.

Results

Both patients are on regular follow up. The adult patient the mean gradient was 4 mm of Hg and peak of 12 mm of Hg. The pediatric patient is on follow-up with the concerned paed cardiologist.

Conclusion

Sub Aortic Stenosis with subaortic membrane, should be differentiated from aortic stenosis of other etiology. Resection of SAM carries long-term benefits. Routine septal myectomy appears to be associated with a low risk of recurrence. The timing of intervention is debatable. Many centres supported waiting until the gradient reaches a peak echocardiographic measurement of 25–30 mmHg, or AI or LVH develops. Myectomy may serve to disrupt this circumferential ring of genetically predisposed cells. Recurrence still remains a problem, especially in the presence of a predisposing associated congenital heart defect. Freedom from re-operation is about 85% at 15 years, regular echocardiographic follow-up is advised.

Submission ID: 8

PREVALENCE AND FACTORS ASSOCIATED WITH UNDERNUTRITION AMONG CHILDREN WITH CONGENITAL HEART DISEASE AT THREE TERTIARY HOSPITALS IN NAIROBI, KENYA

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Background

Children with Congenital heart disease (CHD) have a high burden of undernutrition. Factors associated with undernutrition include type and complexity of heart defect, late diagnosis, timing of surgical correction, lack of adequate nutritional support as well as other associated clinical comorbidities.

Methods

A cross-sectional study conducted between July 2021 and March 2022 at three tertiary care hospitals in Nairobi, Kenya; The Aga Khan University Hospital, Nairobi, Kenyatta National Hospital and Mater Hospital. Objective was to establish the prevalence and factors associated with undernutrition among children with CHD. Undernutrition included any child who had at least one indicator of stunting, wasting, underweight or thinness using relevant WHO standard Z-scores. Univariate and multivariate logistic regression analysis was done to assess for associated factors.

Results

Of the 242 children recruited, 116 were undernourished, a prevalence of 47.9% (95% CI: 41.5%-54.4%) with 35.5% (n=86) being underweight, 25.6% (n=62) were wasted, 17.4% (n=42) were stunted and 8.3% (n=20) had thinness. In the multivariate analysis, children who were undernourished were 2.8 times more likely to receive nutritional support than those who were well nourished (p=0.001, OR: 2.88; 95% CI:1.57-5.34). The type of CHD was not significantly associated with undernutrition (p=0.847, OR:0.94; 95% CI: 0.48-1.84), however, children with comorbidities were 3.2 times more likely to be undernourished (p<0.001, OR: 3.26; 95% CI:1.61-6.84). Other factors that were not statistically significantly associated with undernutrition were sociodemographic factors, presence of pulmonary hypertension, surgical correction of defect, age at diagnosis.

Conclusion and recommendations

The prevalence of undernutrition among children with CHD is high, therefore, the need for nutritional rehabilitation as part of the multidisciplinary care given to these children.

Submission ID: 9

LATE DIAGNOSIS OF CHD AND ITS ASSOCIATED FACTORS IN KENYA: AN ANALYTIC CROSS-SECTIONAL STUDY

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Introduction

Burden of congenital heart disease (CHD) in Africa is generally underestimated mainly due to significant under-reporting and early-related fetal and neonatal mortality.

Methods

A cross-sectional study on paediatric patients with CHD, aged 0–18 years, seen over a 5-year period, between January, 2011 and December, 2016. The objective was to determine the prevalence and factors associated with late diagnosis of CHD seen at three tertiary care hospitals in Kenya (Aga Khan University Hospital Nairobi, Mater Hospital, and Kenyatta National Hospital). Patients were stratified into those diagnosed late (>1 year of age) and those diagnosed early (<1 year of age). Multiple logistic regression analysis was done to determine factors associated with late diagnosis.

Results

The study enrolled 411 patients, with equal gender distribution. Prevalence of late diagnosis (>1 year of age) of CHD was 60.6% (95% CI 55.7–65.3). Median age at diagnosis was 15 (IQR 5–48) months.

Presence of a cardiac murmur (OR = 0.87; 95% CI 0.72–0.92, p-value = 0.016) and level of parental education (OR = 4.99; 95% CI 2.25–11.40, p-value <0001) were associated with a decreased odds of late diagnosis. Other factors like cyanosis, an increase in the number of healthcare workers and healthcare facilities per 10,000 population showed some association with decreased odds of late diagnosis of CHD, but these were not statistically significant.

Conclusion

Late diagnosis of CHD remains alarmingly high in our setting. Initiatives to enhance early detection and screening of CHD should be adopted to reduce related mortality and morbidity.

Submission ID: 10

FOCUSED CARDIAC ULTRASOUND: COMPETENCY AMONG MEDICAL OFFICER TRAINEES IN DIFFERENTIATING CARDIOVASCULAR CAUSES OF DYSPNOEA

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Background

Differentiation of cardiovascular causes of acute dyspnea in resource-limited healthcare settings can be challenging. Diagnostics such as Brain Natriuretic Peptide (BNP) and echocardiography are

often unavailable. The use of Focused Cardiac Ultrasound (FoCUS) protocols may potentially alleviate these challenges. The Cardiac Ultrasound for Resource-limited Settings (CURLS) protocol is non-validated, context specific, easy to train Sub-Xiphoid single window FoCUS tool. We sought to assess trainee competence in evaluating cardiovascular causes of dyspnea using CURLS after a brief training in three domains: Image Interpretation, Image Acquisition, and Image Quality

Methods

This was a quasi-experimental study conducted at a public tertiary hospital. Forty-five medical pre-interns, novices in echocardiography, underwent simulated didactic and hands-on FoCUS skills training using the CURLS protocol and their skills were assessed. Image Interpretation was assessed using a standardized case-based MCQ test. Image Acquisition Skills were assessed using an OSCE checklist. Image Quality was graded by two FoCUS experts using the 2018 ACEP 5 Point Image Quality Assurance Grading Scale. Data analysis involved computing trainee scores in the 3 domains using ranges, means, medians and 95% confidence intervals. Proportions of trainees who attained competence were expressed in percentages.

Results

Aggregate image interpretation competency was attained by n=38 (84 %) of trainees with a median score of 80%. The proportion of trainees attaining category-specific image interpretation competency was: Pericardial Effusion n=44 (98%), Left Atrial Enlargement n= 40 (89%), Cardiomyopathy n=38 (84%), Left Ventricular Hypertrophy n=37 (82%), and Right Ventricular Enlargement n=29 (64%). Image Acquisition Skills Competency was attained by n=36 (80%) of trainees with a median score of 82 %. The two experts were in agreement that 77% of trainee-obtained images were of good quality.

Conclusions

The majority of trainees in our study attained competency in FoCUS skills after training with the CURLS protocol. The simplicity, ease of training and use of the CURLS protocol make it an ideal FoCUS screening tool for training healthcare personnel to use at the point of care in resource-limited settings. The training conditions and participant selection bias limit the generalizability of our results.

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Submission ID: 11

PEDIATRIC CARDIAC DISEASE BURDEN AS SEEN AT COAST GENRAL TEACHING AND REFRRAL HOSPITAL

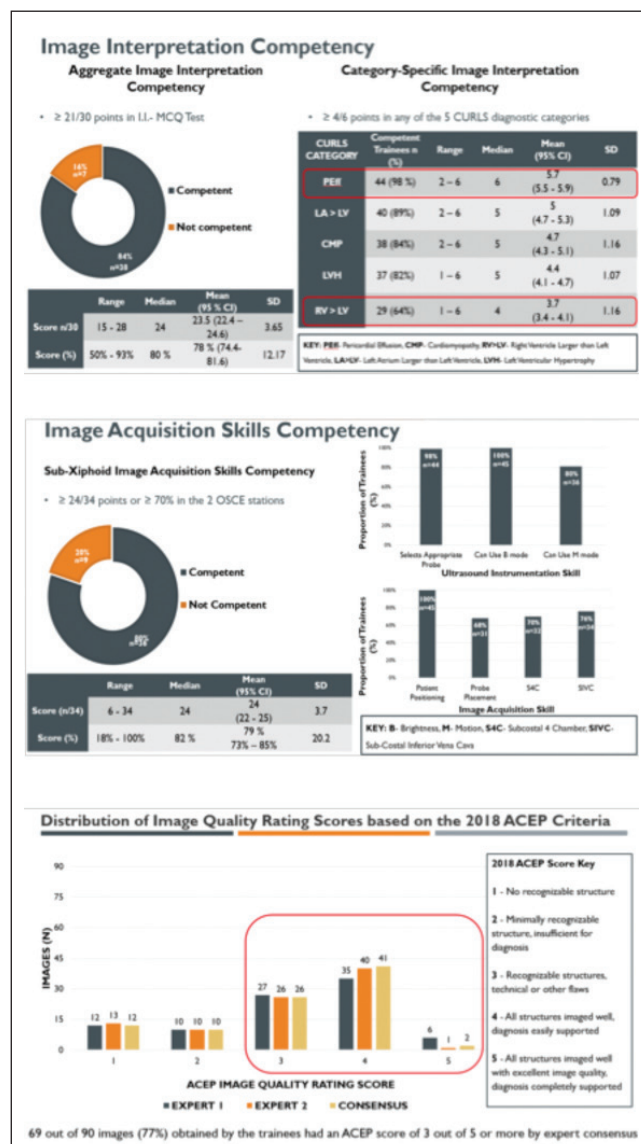
ZENAB MUBARAK, BAKARI SULEIMAN MWASHAMBI, ZENAB THABIT MBARAK

Background

The burden of paediatric cardiac disease is immense in Africa and it's the second leading cause of death of children in the first year of life. Despite the advancement in technology that has improved the outcomes of children with cardiac disease in developed countries, Africa still lags behind and little is known on the outcomes of these children. There is little research work done on the topics of both congenital and acquired diseases especially in sub-Saharan Africa whereby most of the population is marginalised. Several factors have been identified in previous research as financial challenges and lack of access to quality health care being the main reasons. As little effort has been done to improve the outcome, the burden of disease is growing and carries important implications on the future of the children and families in these regions.

Methods

A total of 10 free echo screening outreach camps were conducted in 8 marginalised areas in Kenya. The camps were conducted within

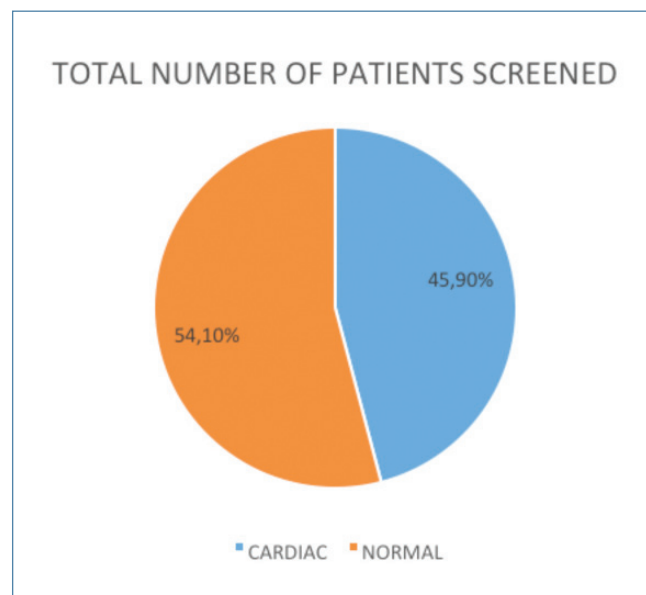


a period of 1 year. The areas include: Malindi, Kilifi, Msambweni, Kinango, Voi, Lamu, Garissa and Mandera. Both children and adults with congenital heart diseases as well children with acquired cardiac diseases were identified and various treatment plans and medications were provided.

Results

A total of 651 individuals were screened out of which 581 were children and 70 were adults. Among the 651 individuals screened 299 were diagnosed with a cardiac disease. This represents 45.9% of the total individuals screened. Of the 299 patients 12 (5%) were adult and 287 (95%) paediatrics.

Diagram



Conclusion

There are a lot of paediatrics cardiac cases in our community that are undiagnosed and a lot of these patients are dying.

Submission ID: 12

ECHOCARDIOGRAPHY IMAGING IN PATIENTS UNDERGOING CHEMOTHERAPY

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Introduction

Echocardiography is non-invasive imaging modality that provides comprehensive evaluation of the heart at all stages in cancer treatment and is able to detect complications secondary to therapeutic regime used (Radiotherapy or chemotherapy). Echo remains to be the leader in imaging due to its accessibility, portability and lack of exposure to radiation.

Modalities

2D Echocardiography
3D Echocardiography
Strain Echocardiography.

Results

Echocardiography is widely used technique in diagnosis, prevention and risk assessment in CTRCD (cancer therapy related cardiac dysfunction)

Utility of advanced Echo has proved helpful in detecting changes in myocardial mechanics before changes in LV ejection Fraction occur.

Different Echocardiography methods and their shortcomings.		
	Advantages	Disadvantages.
1.2D Echocardiography	Widely available Easy assessment Powerful prediction of death and advanced outcomes in heart failure.	Load dependent High observer variability compared to 3D echo Not sensitive to detect cardio toxicity.
2.3D Echocardiography	Better in determination of LVEF compared to 2D Echo Better Reproducibility.	High reliability on quality of images. Less available Depended on the experience of operator.
3.Global Longitudinal Strain	Ability to detect subclinical cardio toxicity in early stages. Superior prediction of mortality compared to 2D LVEF Less Load dependent	Dependent on image quality Operator dependent and experience. Vendor/software specific.

International guidelines

Definition of cardiotoxicity by echocardiography:

LVEF: a decline in LVEF by > 10% (absolute percentage points) to a value < 50%,

Definition of probable subclinical cardiotoxicity by echocardiography:

LVEF: a decline in LVEF by > 10% (absolute percentage points) to a value ≥ 50% with an accompanying fall in GLS > 15% (where GLS measurement is available).

Conclusion

Echo remains to be the leader in imaging due to its accessibility, portability and lack of exposure to radiation. Echocardiography has been utilized in chemotherapy patients for monitoring heart function in all stages of chemotherapy administration. Major focus has been on the LVEF and any changes that arise in the course of treatment. Recent advances in echocardiography (Strain Echocardiography), has been in the forefront in monitoring the patients.

Submission ID: 13

EVALUATING THE IMPACT OF ELECTRONIC MEDICAL RECORDS (EMR) SYSTEM IN IMPROVING THE CARE PROCESS, TREATMENT OUTCOMES AND DATA QUALITY IN HYPERTENSIVE CLINICS IN TWO COUNTIES - 2021/2022.

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Introduction

A quarter of the Kenyan adult population has hypertension with only 4% having adequate control. This study aimed to evaluate the impact of an EMR on care, outcomes, and data quality, by comparing a clinic using an EMR and one using a paper-based system.

Methods

We carried out a cross-sectional retrospective review of records to assess effectiveness of an EMR system in improving care as well as surveillance. Makueni and Nyeri were our intervention and comparison sites respectively. Analysis included descriptive statistics, bivariate analysis and logistic regression modelling. Data quality audits were carried out to assess completeness and consistency.

Results

We enrolled 729 records with 77.8% (n = 562) being female and 25.6% 60-69 years. Makueni mean systolic / diastolic blood pressure was 143/82mmHg (SD 13/8) while Nyeri was 139/84 mmHg (SD 17/7). Makueni performed better in tracking comorbidity screening ($p < 0.0001$) with regression modelling showing relevance of this in control. Data completeness in Makueni was higher for investigations, body mass index (BMI) and counselling on complications, as well as higher consistency to the Kenya Health Information System reports.

Discussion

There were improved outcomes and surveillance particularly with comorbidity screening and counselling where the EMR was deployed. Scale-up of EMR systems was recommended.

Key Words

Hypertension, Electronic Medical Records Systems, Non – Communicable Disease Surveillance, Kenya

Submission ID: 14

CASE SERIES ON PROSTHETIC VALVE THROMBOSES TREATED WITH INTRAVENOUS THROMBOLYSIS AT A TERTIARY TEACHING HOSPITAL IN NAIROBI – KENYA

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Introduction

Valvular heart disease is a prevalent condition that significantly contributes to the cardiovascular disease burden worldwide, especially in developing countries. Rheumatic heart disease (RHD) is the most common etiology in developing countries. RHD tends to occur among younger individuals aged 5-15.

In the past several decades, many patients have undergone valve replacement, with mechanical prostheses being preferred over biological valves due to their longevity. However, complications following valve replacements can either be valve-related or non-valve-related, with thromboembolism, bleeding, and prosthetic valve endocarditis being common. The incidence of prosthetic valve thrombosis is reported to be 0.03% in bioprosthetic valves and 0.5% to 8% in mechanical valves in the aortic and mitral positions, respectively.

The clinical presentation of prosthetic valve thromboses varies among patients and can manifest as heart failure or peripheral embolism features. The commonest precipitants for prosthetic thrombosis are inadequate anticoagulation and poor patient compliance locally.

This report presents two cases of patients who presented with heart failure post-valve replacement for rheumatic heart disease. The patients were managed with anticoagulation and fibrinolysis.

Cases

Case 1: 42 – year old female who had a mitral valve replacement for RHD in 2016 and had been on torsemide 10mg OD, bisoprolol 2.5mg OD, and warfarin 4mg BID. In December 2022, she was admitted with dyspnoea and productive cough. A few weeks earlier, she had been evaluated at a gynaecology clinic for heavy menses and her warfarin dose was reduced. On evaluation, she had features of heart failure. Her INR was 1.29. Transesophageal echo done confirmed presence of thrombus in the mitral valve. She was thrombolysed with alteplase 100mg infusion over 2 hours on day 5 admission. Thereafter, she had tremendous clinical improvement.

Case 2: 37-year-old male with RHD status post Aortic valve replacement in 2004 on warfarin since then. He was admitted in March 2023 with NYHA III dyspnea associated with chest pains, fever, and chills. He had an antecedent history of diarrhoeal illness. On evaluation, he was hypotensive, mildly hypoxic requiring minimal oxygen supplementation, and had a grade IV systolic

ejection murmur over the right upper sternal border with radiation to the carotids, and grade II diastolic murmur best heard at the left lower sternal border with the patient leaning forward. His INR was at 1.54. The INR was at 2.1 one month prior to the presentation. 2D Echo showed severe aortic regurgitation and high gradient across the aortic valve mechanical prosthesis. He subsequently underwent a transesophageal echocardiogram, which showed severe prosthetic valve regurgitation and an immobile prosthetic aortic valve. A mass concerning for thrombus was seen on one of the leaflets. LV systolic function was preserved with EF 55-60%. The patient was thrombolysed with alteplase 100mg infusion over 2 hours. Thereafter, his symptoms improved and his blood pressure got better.

Discussion

The predisposing factor in the first case was the alteration of the dose of warfarin while in the second case, there was reduced warfarin bioavailability of the warfarin in the background of an already borderline INR.

Conclusion

Suspected valve thrombosis requires prompt treatment with thrombolysis which be lifesaving. Alteplase was used successfully without any significant adverse events.

Submission ID: 15

THE EFFECTS OF BETA VULGARIS JUICE ON THE COMMON CAROTID ARTERY OF AN ALBINO RAT (RATTUS NORVEGICUS) FOLLOWING PROLONGED ADMINISTRATION OF A HIGH SALT DIET

JIMMY GAKURE NJORGE, KHULUD NURANI, JEREMIAH MUNGUTI

Background

High salt diets have been linked to an increase in the incidence of hypertension in Africa. African societies have reported inadequate access to conventional antihypertensive care, raising the need for a cheaper mode of control. The red beetroot (Beta vulgaris) has been shown to have beneficial effects in cardiovascular disease. However, changes in vascular composition associated with Beta vulgaris use remain unexplored.

Materials and methods

Thirty-eight (38) male rats aged two months were used for this study. Two (2) rats were used to demonstrate baseline anatomy of the common carotid artery. Fifteen (15) rats were used in each of the experimental groups (High salt and high salt + beetroot) while six (6) rats were used in the control (Standard rat chow and water) group. Beta vulgaris juice was administered by oral gavage at a dosage of 10 ml/kg. Thereafter, at week 2, 5 and 8, 5 rats from each of the experimental groups and 2 rats from the control group were euthanized, perfused with formal saline and their common carotid arteries (CCAs) harvested and processed. The variables measured were carotid intima-media thickness, elastic fiber density and vascular smooth muscle cell density.

TABLE: CAROTID INTIMA-MEDIA THICKNESS RESULTS

GROUP	CIMT MEDIAN + IQR (µm)				P Value
	WEEK 0 (BASELINE)	WEEK 2	WEEK 5	WEEK 8	
Control	26.44 (25.98-26.89)	27.88 (27.41-28.34)	32.96 (32.12-33.80)	37.15 (36.81-37.45)	p=0.083
HS	-	33.80 (32.16-34.25)	43.37 (36.50-44.53)	53.09 (51.23-54.66)	p=0.002*
HS+B	-	32.17 (32.05-33.22)	35.96 (31.75-33.66)	43.85 (42.68-44.96)	p=0.006*
P value	-	p=0.90	p=0.018*	p=0.009*	

Results

The high salt group had a significant increase in intima-media thickness ($p=0.002$). The administration of Beta vulgaris juice limited this effect ($p=0.05$). Furthermore, prolonged high salt administration was associated with a significant increase in smooth muscle density ($p=0.023$). This effect was ameliorated by the administration of Beta vulgaris juice ($p=0.22$). Moreover, there was a progressive decrease in elastic fiber density ($p=0.004$). This effect was ameliorated by Beta vulgaris juice administration ($p=0.066$).

Conclusion

The administration of Beta vulgaris juice is protective against structural effects caused by prolonged administration of high salt diets. Therefore, Beta vulgaris juice can be indicated as a dietary supplement to the control of hypertension.

Submission ID: 16

FIRST KENYAN – MADE LOW COST AND PORTABLE ECG MONITOR

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Introduction

The World Health Organizations Global Status Report on Noncommunicable Diseases (NCDs) indicated that chronic diseases, including cardiovascular disease, contributed to 74% of all deaths in 2012. Unsurprisingly, 77% of NCD deaths occurred in middle- and low-income countries, with the majority caused by cardiovascular disease. The rapid rise in NCD is predicted to impede poverty reduction initiatives in LMIC. Lack of adequate

primary care, including access to physicians, technologies, and treatments, contributes to poor CVD outcomes. ECG devices have traditionally been used in large city hospitals in screening, diagnosis, and monitoring the treatment of cardiovascular disease. However, these devices are still largely inaccessible and unaffordable to most regions in Kenya.

Objective

To assess the implementation and impact of a low-cost wireless ECG device in remote urban areas in Kenya. We demonstrated the primary diagnostic capability and safety of a newly developed adhesive ECG monitoring device.

Methodology

This device provided similar diagnostic accuracy with superior noise-signal ratio and image acquisition reliability compared to conventional currently market-available ECG monitoring systems. It could distinguish various arrhythmias, including atrial flutter/fibrillation, ventricular premature beat, sinus pause, and AV block. Inter-device variability with other adhesive ECG monitoring devices was not significant.

Results

In this study, we demonstrated the primary diagnostic capability and safety of a newly developed adhesive ECG monitoring device. This device provided similar diagnostic accuracy and superior noise control and image acquisition reliability compared to conventional ECG monitoring systems. It could distinguish various arrhythmias, including atrial flutter/fibrillation, ventricular premature beat, sinus pause, and Mobitz type I second degree AV block in a similar fashion as other commercial devices (Phillips and GE).

Conclusion

In this preliminary study, we proved that the new portable ECG monitoring device demonstrated comparable results with conventional ECG monitoring devices in detecting arrhythmias.



Figure. 1.1



Figure. 1.2



Figure. 1.3

Figure 1.1 – Image of the pocket-size wireless ECG devices.

Figure 1.2 – Image demonstrating the wearable ECG device with electrode adhesives.

Figure 1.3 – Dashboard showing real time ECG data, BPM, HRV, GSR, Steps, Acceleration and Temperature (BLE data transmission from hardware to software interface).

Submission ID: 17

MEDICATION ADMINISTRATION ERRORS FOR PATIENTS ADMITTED AT JAKAYA KIKWETE CARDIAC INSTITUTE DAR ES SALAAM TANZANIA

ADAM NDAMAYAPE

Background

medication administration errors are among the most common type in medication error. They are the most common health threatening mistakes that affect the health and safety of the patient. Such mistakes are considered as a global problem which increases mortality rates, length of hospital stays, and related costs.

Objective: To explore the types, causes and why medication administration errors are not reported.

Methods

The present descriptive cross-sectional study was conducted on 75 nurses randomly selected from Jakaya Kikwete Cardiac Institute working in wards and intensive care units. A four-part questionnaire was used. The first part was on the participant demographic characteristics. The second part consisted of 15 questions on why medication errors occur. The third part consisted of 8 items asking on why medication errors are not reported and the fourth part comprised of 9 items on percent of each type of error reported. Data were analyzed using SPSS software version 20. The significant p-value was considered less than 0.05.

Results

Majority of the participants were female 72%, male 28%. The mean age was 34.5+-1.93, the majority had diploma level 65.4%, bachelor degree 29.3%, and master degree 5.3%. The most reported error was wrong time of administration and omission error. The most possible cause of error was tiredness due to excess work,

few numbers of nurses to patient's ratio, and heavy workload in the ward. The most reasons why medication errors are not reported was absence of incident report book for medication error, lack of protocol and guideline for medication error and fear of the staff from being fired after reporting drug error.

Conclusion

Since many medication errors are not reported by nurses, nursing leader must show positive response to nurses who are reporting medication error in order to improve patient safety. It is also very important to increase the number of qualified staffs in each working shift since heavy workload, fatigue and inadequate staff in each working shift are the most effective factor causing medication error, however incident report and protocol for medication error has to be initiated in the institute.

Submission ID: 18

PREVALENCE AND FACTORS ASSOCIATED WITH IDEAL CARDIOVASCULAR HEALTH IN KENYA: A CROSS-SECTIONAL STUDY USING DATA FROM THE 2015 KENYA STEPWISE SURVEY

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Background

Cardiovascular diseases (CVDs) are the leading causes of non-communicable disease (NCD) deaths in Kenya. The high burden of CVDs is attributed to increase in risky behaviours predisposing to cardiometabolic risk factors. Ideal cardiovascular health (ICH), coined by the American Heart Association (AHA) in 2010, is defined by four ideal health behaviours (physical activity, healthy diet, non-smoking and body mass index (BMI) of below 25kg/m²) and three cardiometabolic health factors (blood pressure <120/<80mmHg, fasting blood glucose <100mg/dL and total cholesterol <200mg/dL). This study aimed at establishing the prevalence of ICH in Kenya and their associated factors.

Methods

Secondary analyses of data from the Kenya STEPwise survey for non-communicable diseases (NCD) risk factors 2015 were performed for this study. The study sample included 3427 adults aged 20-70 years. ICH was defined by the cut-offs proposed by AHA based on history of CVD, health behaviours (smoking, physical activity, diet, BMI) and health factors (blood pressure, glucose, and cholesterol levels). Multivariable binary logistic regression analysis was performed using STATA 17 software.

Results

About 3.9% had 0-2 (poor) ICH metric, 35.8% had 3-4 (intermediate) ICH metrics while 60.3% had 5-7 (ideal) ICH metrics. Only 4.3% had all the seven ICH metrics. The ICH prevalence declined with increasing age, was higher in rural compared to urban areas

(67.6% vs 54.9%) and increased with increasing wealth status. The adjusted model showed that males (AOR: 1.6, 95% CI: 1.3-2.0), richer wealth quintiles (AOR: 1.5-2.0), residents of Nyanza region (AOR: 2.1, 95% CI: 1.2-3.7) had increased odds of ICH. There were reduced odds of ICH among higher age groups (AOR: 0.20-0.54), alcohol users (AOR: 0.51, 95% CI: 0.37-0.70), urban (AOR: 0.65, 95% CI: 0.49-0.85) and North-eastern region (AOR: 0.36, 95% CI: 0.18-0.73) residents.

Conclusion

About 6 in 10 Kenyan adults have ideal cardiovascular health status despite existing disparities by age, sex, residence, wealth, and alcohol use. There is need to design interventions targeting females, residents of urban and arid areas, alcohol users, and poorer households. The findings also call for implementation of policies targeting cardiovascular health promotion among the general population

Submission ID: 19

TRAINING THE NEXT GENERATION OF HYPERTENSION RESEARCHERS: THE IMPROVING HYPERTENSION CONTROL IN RURAL AFRICA GLOBAL HEALTH RESEARCH GROUP

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Background

There is an urgent need to increase the numbers of health researchers with skills to conduct studies on hypertension and related conditions in sub-Saharan Africa (sSA). IHCOR Africa is a NIHR Global Health Research Group that aims to strengthen research and improve hypertension management in sSA, through a range of training activities.

These activities target early, mid-career and senior researchers. Here we describe findings from the initial offerings of training activities targeting early and mid-career researchers.

Methods

The Introduction to Hypertension Research course is a 4-week online course that we are offering at no cost to early career researchers.

The course consists of 3 contact hours each week during which participants watch pre-recorded lectures while also participating in live question and answer sessions with a panel composed of hypertension experts drawn from the IHCOR-Africa group.

Mid-career researchers are targeted through an in-person Research Skills Strengthening course held annually at the MRC Gambia Unit. The course provides experiences and skill sets that are required for professional and personal career development in health research. Topics covered include mentorship, leadership styles, grant writing and critical thinking.

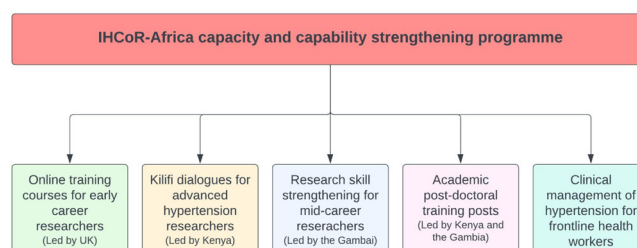


Figure 1: Training activities conducted by the IHCOR- Africa Global Health Research Group

Advanced hypertension researchers will participate in two Kilifi Dialogues meetings where they will present on-going work, share challenges and insights they have gained in the course of their research and also deliberate on potential future projects.

Results

We have held one online training course and one research skills strengthening workshop. Both activities were oversubscribed. Participants have originated from West, Central and East Africa. Feedback received from participants in both courses was overwhelmingly positive.

Conclusion

The training activities have been well received by the participants and have the potential to improve the skills of African researchers. More activities are planned during the course of the project.

Submission ID: 20

ROLE OF CLINICAL OFFICERS-CARDIOLOGY IN PREVENTIVE CARDIOLOGY

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Background

The prevention and management of cardiovascular diseases (CVD) requires a comprehensive and coordinated approach involving various healthcare professionals. Clinical officers play a crucial role in the prevention of CVDs due to their unique skill set and accessibility in health care systems. Kenya is a low-middle income country, as indicated by the World Bank (2018), with 72.5% of its people living in rural areas. Kenya had an average of 1.6 physicians and 2.3 clinical officers per 10 000 of the population in 2018/19. As of 2023 there are about 30 clinical officers trained in cardiology, indicating shortage in preventive cardiology.

Methodology

This study adopts a descriptive research design through comprehensive literature review. To provide an overview of the role of clinical officers specialized in cardiology in preventive cardiology.

Results

Clinical officers-cardiology have become indispensable in the field of preventive cardiology. They possess required expertise to evaluate cardiovascular risk factors, offer counseling on lifestyle modifications, and implement preventive interventions. Their crucial role in early detection and management of cardiovascular risk factors and diseases significantly prevents progression to severe cardiovascular events. Additionally, they exhibit proficiency in conducting cardiac screenings, interpreting diagnostic tests and appropriately referring patients for specialized care. The integration of clinical officers-cardiology enhances accessibility and delivery of preventive cardiology services leading to improved patient outcome and reduces cardiovascular morbidity and mortality.

Conclusion

The integration of clinical officers-cardiology in preventive cardiology proves to be an effective strategy in addressing the growing burden of CVDs especially in resource limited settings. By working collaboratively with other health care professionals, clinical officers' cardiology enhances the accessibility and delivery of preventive cardiology services. Inclusion of clinical officer specialized in cardiology in all levels of healthcare as per the Kenya National Guidelines for CVDs Management.

Submission ID: 21

RELATIONSHIP BETWEEN OBSTRUCTIVE SLEEP APNOEA AND HYPERTENSION: A SINGLE CLINIC EXPERIENCE

K MWAZO, B NDUATI

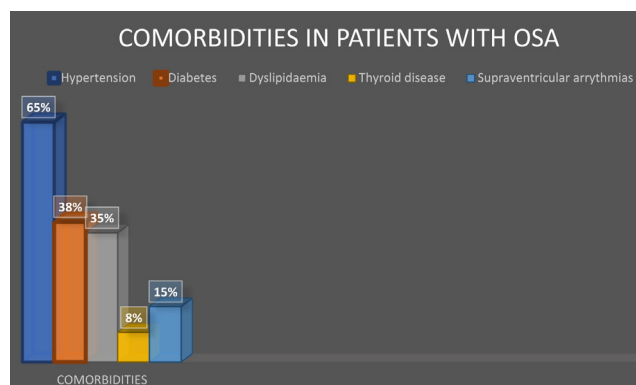
Background

The relationship between OSA and hypertension has garnered substantial research and clinical attention with numerous studies showing a strong and bidirectional relationship between them. We aim to present findings from a single clinic experience that further illustrates this relationship.

Method

We did a retrospective analysis of 26 patients who underwent a sleep Holter test at our clinic within the last 3 years who had a history of snoring/disordered sleep. The patient characteristics were as below:

Mean age was 56.2 years. with a median of 55 years. Mean BMI was 34.7 with a median of 32.5. The mean AHI was 16.1. with 73% having AHI above 15.



Findings

73% of the patients had significant OSA, highlighting the high prevalence of OSA among individuals with a history of snoring or disordered sleep.

The study also indicates a significant prevalence of comorbidities among the analyzed patients suggesting a potential complex relationship between OSA and these comorbidities.

The high prevalence of hypertension among patients with OSA is noteworthy. It's therefore important for clinicians to inquire about the sleep quality in patients with hypertension. A sleep holter should be considered for all patients with sleep-disordered breathing or resistant/poorly controlled hypertension. The mean BMI of 34.7 suggests that the patients, on average, were obese aligning with the well-established association between obesity and OSA.

Conclusion

Identifying and treating OSA in patients with hypertension is crucial, as effective management of OSA may contribute to better control of blood pressure and potentially reduce the risk of cardiovascular complications. CPAP is a commonly prescribed treatment for OSA that helps keep the airway open during sleep. Further research may be needed to explore potential treatment approaches that address both OSA and the associated comorbidities.

Submission ID: 22

THE USE OF TELE - ECG & POINT OF CARE ULTRASOUND IN PRIMARY CARE, FOR EARLY DETECTION AND REFERRAL OF CARDIOVASCULAR PATIENTS IN SIAYA COUNTY. A PROCESS PAPER.

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1. UON 2. NCDAC 3. PHILIPS FOUNDATION

Background

NCDs and CVDs burden are rapidly increasing in Kenya. CVDs account for a substantial portion of hospital admissions (25%) and cause a notable number of deaths (13%), as revealed by autopsy results. To address this challenge, strengthening the capacity of primary healthcare providers and introducing innovative technologies at Level III facilities hold promise for reducing the burden by up to 80%.

Methods

A mixed methods design, including a two-arm, quasi-experimental approach, was employed. Furthermore, ongoing support through on-site and real-time remote mentorship as well as evidence-based programmatic interventions, was implemented in five selected facilities. Strategic partnerships were established to strengthen the facilities with functional equipment and technologies. Persons living with NCDs (PLWNCs) were also empowered through advocacy training to influence policies and advocate for their needs and self-management.

Results

32 Level III healthcare providers were trained in performing point-of-care 12-lead ECGs and interpreting echocardiograms. Utilizing the MoyoAfya protocol, a total of 979 patients were screened, with 228 undergoing ECGs and 165 receiving echocardiograms. This screening led to direct benefits for 23% of individuals through ECG and 16% through echocardiogram scans, who would have otherwise been missed. The project gained significant media attention, featuring in BBC Storyworks films and local media. Ongoing cost-benefit analysis of the MoyoAfya CVD care model and PLWNCs' advocacy efforts show promising prospects, backed by strong support from the County Assembly Speaker and the Governor.

Conclusion

There is transformative impact of collaborative efforts in advancing early detection and management of CVDs and NCDs in resource-constrained settings. Portable Tele-ECG and Tele-Echo technologies in low-level facilities has great potential for improved healthcare access and outcomes. The project's sustainability and continued success is pivoted on current momentum and capitalizing on the accomplishments achieved thus far, exploring opportunities for expansion to benefit more eligible patients, regions, and healthcare facilities.

Submission ID: 23

STRUCTURE AND COST-EFFECTIVENESS OF INTEGRATED CARE MODELS FOR THE PREVENTION AND MANAGEMENT OF CARDIOMETABOLIC MULTIMORBIDITY: A SYSTEMATIC LITERATURE REVIEW

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Background

The increasing burden of multimorbidity, especially in low- and middle-income countries (LMICs), calls for adaptive health systems

interventions. Integrated care models are recommended as they improve efficiency in the prevention and management of chronic disease multimorbidity and are considered cost effective. We conducted a systematic review to identify the structure and health-economic impacts of integrated care models for cardiometabolic multimorbidity.

Methods

A systematic search was conducted in Medline, Web of Science, EMBASE, CINAHL, Psycinfo, Econlit, Scopus, and the Cochrane register of controlled trials, for articles in English on model-based economic evaluations of integrated care models for cardiometabolic multimorbidity. Integrated care was operationalised based on Wagner et al. (2001)'s chronic care model (CCM) and Singer et al. (2011)'s framework for measuring integrated care for patients with multiple/ complex chronic conditions. Concordant and discordant cardiometabolic multimorbidity were considered, and Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed.

Results

Out of the 5416 unique records identified from title and abstract screening, sixteen full-text articles were finally included. More studies were conducted in Europe (6) and Asia (4) as compared to other continents including Australia (2), America (2), and Africa (2). The integrated care models focused on multiple-disease screening, while others were personnel-focused (e.g., pharmacist-led, nurse-led integrated care), used comprehensive disease management, and a quality improvement collaborative approach. The primary disease in eleven of the studies was either hypertension or diabetes, and most of the studies addressed concordant multimorbidity with related complications such as MI, stroke, CHD, heart failure. The main discordant comorbidities were cancers and HIV. Integrated care models were found to be cost-effective for cardiometabolic multimorbidity at the chosen willingness-to-pay thresholds.

Conclusions

Different strategies are implemented in integrated care models for chronic disease multimorbidity, and the structures vary by setting. While integrated models have been found cost-effective, evidence is needed on the cost-effectiveness of different strategies within the same context especially in LMICs where limited evidence exists.

Submission ID: 24

OUTCOME AFTER COX-MAZE IV PROCEDURE FOR ATRIAL FIBRILLATION IN RHEUMATIC HEART DISEASE PATIENTS: EXPERIENCE FROM TENWEK HOSPITAL (A PRELIMINARY REPORT)

AREGA F. LETA (MD), AGNETA ODERA (MD), YONAS A. TEFERI (MD), DIANA SANG (MD), IAN MUTAI (MD), EVALINE CHEMUTA

Background

Rheumatic heart disease (RHD) is a leading cause of Atrial fibrillation (AF), particularly in young patients. The Cox-maze IV (CM-IV) procedure is a surgical treatment option for AF that aims to restore normal sinus rhythm (NSR). However, the sinus rhythm conversion rate of the Cox-maze IV procedure in patients with RHD is not well established. This is a preliminary report on the CM-IV procedure in patients with RHD at Tenwek Hospital, Kenya.

Methods

This is an ongoing intervention-based study of patients with RHD who underwent the CM-IV procedure at Tenwek Hospital. All patients underwent bi-atrial cryo-ablation during concomitant valve surgery followed by oral amiodarone for 6 weeks for rhythm control. Patient follow-up was conducted by means of chart review, physician examination, and electrocardiographic documentation. All patients had a minimum of 3 months of follow-up. Data were entered, analyzed, and reported employing non-parametric statistical methods with SPSS software packaging 26.

Results

From October 2021 through May 2023, 30 patients (24 female and 6 male patients; mean age, 40 ± 14 years) underwent the CM-IV procedure. Ninety percent of patients were in longstanding persistent AF, 7% were in paroxysmal AF, and 3% were in persistent AF. The mean size of the left atrium on pre-operative echocardiography was 6.7 ± 1 (range, 4.7–13.5 cm). All the patients had an underlying RHD and underwent cardiac operations. The majority (56%) had isolated mitral valve replacement, 40% had mitral and aortic valve replacement, and 1 patient had isolated mitral valve repair. There were 7 peri-operative deaths; subsequently, 23 patients made it to the minimum follow-up period of 3 months. NSR was restored in 78% (18/23) of the patients. Freedom from AF recurrence was 70% (16/23) at 6 months. Conversion rate to NSR was not found to have a statistically significant association with the type and duration of AF or the pre-operative size of the left atrium.

Conclusion

The CM-IV has satisfactory long-term efficacy even in the presence of dilated atrial chambers in patients with RHD. Early surgical therapy, aggressive left atrial reduction, and correction of tricuspid regurgitation at the time of surgery may increase the long-term success rate. Long-term follow-up of the patients will help accurately measure the overall outcome and identify contributing factors.

Submission ID: 25

PRE-OPERATIVE MELD-NA SCORE AS AN INDEPENDENT PREDICTOR OF PERI-OPERATIVE MORTALITY AFTER VALVE SURGERY IN RHEUMATIC HEART DISEASE PATIENTS: EXPERIENCE FROM TENWEK HOSPITAL

AREGA F. LETA (MD), YONAS A. TEFERI (MD), LIDETU KAYAMO (MD), EVALINE CHEMUTAI

Background

Most pre-operative risk scores for valve replacement in cardiac surgery have been implemented using non-RHD cases. These were difficult to translate to RHD patients as the pathophysiology is considered different from other cardiac surgical pathologies. This study aims to assess the use of the Model for End-stage Liver Disease score, including sodium (MELD-Na), as a pre-operative predictor of mortality after cardiac surgery in RHD patients.

Methods

This retrospective cohort study was conducted at Tenwek Hospital, Kenya. Our study comprised 94 patients who underwent open heart valve replacement surgery from March 2022 to March 2023. The time zero for follow-up in this study was the date of surgery. Those patients who underwent mitral valve replacement (MVR), aortic valve replacement (AVR), and tricuspid valve repair (TVr) surgery were included in the study. Tenwek Hospital's electronic medical record system was used to collect patients' clinical data. IBM SPSS Statistics 27.0 was used to run the analysis of data using the Chi-square and binary logistic regression.

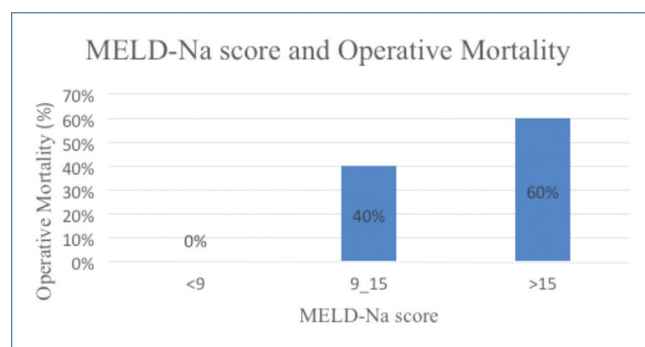


Fig. 1: Mortality based on MELD-Na score category

Results

The study included 94 patients (61.7% female, 38.3% male; median age 23). Most (68.1%) of the study subjects had mitral valve disease (35.1% had mitral regurgitation and 33% had mitral stenosis). Seven percent of the patients had aortic insufficiency (AI). In addition, 43.6% had severe tricuspid regurgitation (TR) and 29.8% had moderate TR. MVR was done for 67% of patients, AVR for 5.3%, and MVR plus AVR for 26.6%. The percentage of patients who underwent TVr together with MVR, AVR, or both was 45.7%. The overall mortality rate of this study was 10.6%. In binary logistic regression analysis, a higher MELD-Na score was significantly associated with perioperative mortality (a P-value of <0.001).

Conclusion

The study showed that increasing in MELD-Na score increases the risk of operative mortality after RHD valve surgery. Pre-operative MELD-Na score can be used as risk stratification in RHD patients undergoing cardiac surgery. However, further prospective multicenter studies with larger sample sizes and longer study duration may be needed to support this conclusion.

Submission ID: 26

PRIMARY CAUSES OF HEART FAILURE AND DIRECT MEDICAL COST OF HOSPITALIZATION AT MOI TEACHING AND REFERRAL HOSPITAL, KENYA

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Background

Heart failure (HF) is an emerging global contributor to cardiovascular morbidity and mortality, but data on its primary causes in view of the ongoing epidemiologic transition and direct medical cost of HF hospitalization is limited in Kenya, whose gross monthly household income is Kshs. 20,122.23.

Methods

This was a prospective study conducted at Moi Teaching and Referral Hospital. Primary causes were extracted from the echocardiogram reports and adjudicated by the study cardiologist. Direct medical cost of hospitalization was derived using micro-costing and healthcare system perspective, and reported as per patient per day. Drivers of overall cost were explored using linear regression model with standardized β -coefficients.

Table 1: Summary of primary causes and direct medical cost of HF hospitalization

Primary Cause of Heart Failure	n (%)	95% CI	Cost/pt/dy in Kshs (SD)	LOS (SD)
Cor Pulmonale	41 (28.9)	21.1 – 37.9	9,696.38 (5,646.20)	10.5 (6.9)
Cardiomyopathy	37 (26.1)	18.3 – 35.0	12,268.08 (7,816.12)	11.3 (8.4)
Rheumatic Heart Disease	28 (19.7)	12.0 – 28.7	15,299.08 (13,196.89)	8.8 (7.1)
Hypertensive Heart Disease	24 (16.9)	9.2 – 25.9	8,934.33 (3,757.89)	10.6 (7.0)
Ischaemic Heart Disease	9 (6.3)	0 – 15.3	12,966.47 (6,656.49)	6.7 (1.9)
Pericardial Disease	3 (2.1)	0 – 11.1	5,968.67 (1,542.23)	11 (2.7)
Total, N	142			
Overall cost/patient/day			11,470.94 (8,289.57)	
Mean LOS				10.1 (7.1)

Results

142 participants were recruited from September to November 2022. 51.4% were females, and the overall mean age was 54 (SD 20). Cor pulmonale (CP) was the leading primary cause, 41 (28.9%), then dilated cardiomyopathy (DCM), 37 (26.1%), rheumatic heart disease (RHD), 28 (19.7%), hypertensive heart disease (HHD), 24 (16.9%), ischaemic heart disease (IHD), 9 (6.3%) and pericardial disease (PD) 3 (2.1%). Overall direct cost of HF hospitalization was

Kshs. 11,470.94, with the mean length of hospital stay (LOS) of 10.1 (7.1). RHD incurred the highest costs, Kshs. 15,299.08 (13,196.89), then IHD, Kshs. 12,966.47 (6656.49), and DCM, Kshs.12,268.08 (7,816.12). Cost of medications was the leading driver, $\beta = 0.56$ (0.55 – 0.56), followed by inpatient fees (admission and daily bed charges), $\beta = 0.27$ (0.27 – 0.28) and laboratory investigations, $\beta = 0.19$ (0.18 – 0.19).

Conclusion

Cor pulmonale, CM, RHD and HHD were the major causes of HF. The overall direct medical cost of hospitalization was extremely expensive compared with the average monthly household income in Kenya. Widespread insurance cover is therefore recommended to cushion families against such catastrophic health expenditures beside public health measures aimed at addressing primary causes of HF.

Submission ID: 27

SUB-AORTIC VALVULAR STENOSIS MIMICKING HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY (HOCM)

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Background

17 years' old female presented with a 3 years' history of progressively worsening dyspnea, currently in NYHA 3. She had no history of recurrent throat infections, joint pains, tremors or skin changes. She had no family history of cardiomyopathy. She was on metoprolol 25mg od and digoxin 0.125mg OD.

On examination she was stable with normal vital signs. She was not pale and had no pedal edema. Cardiovascular system examination revealed pulses parvus et tardus, normal JVP, Grade 5/6 mid-systolic ejection murmur loudest at the second right intercostal space radiating to both carotids. The murmur remained unchanged with valsalva. Chest was clear on auscultation and the abdomen was not distended and there was no hepatomegaly.

Methods

An ECG revealed normal sinus rhythm with a rate of 90 beat/min, left atrial enlargement and left ventricular hypertrophy. (Figure 1)

Transthoracic Echocardiogram revealed a sub-aortic membrane 1cm below the aortic valve just above the LVOT. There was severe concentric left ventricular hypertrophy more marked at the septum with a septal thickness of 1.8cm (Figure 2). There was mild systolic anterior motion of the mitral valve with flow acceleration across the LVOT. Although the aortic valve was tri-leaflet and structurally normal, the Doppler pattern appeared similar to that seen in aortic stenosis (maximum pressure gradient of 156mmHg and mean pressure gradient of 86 mmHg) but the characteristic late peaking associated with dynamic obstruction was absent. (Figure 3) There was mild aortic regurgitation and mild mitral regurgitation with a markedly enlarged left atrium. The LV systolic function and RVSP were normal.

A Cardiac CT Scan confirmed the presence of a sub-aortic membrane measuring 9mm below the aortic valve and concentric

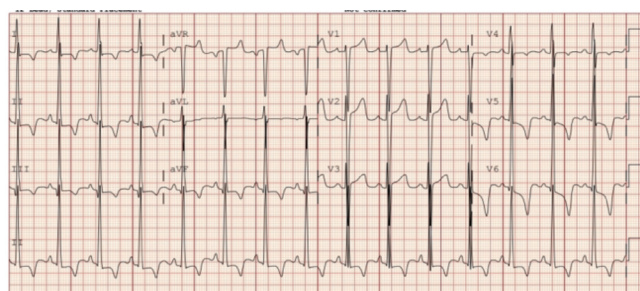


Figure 1 – ECG showing normal sinus rhythm, rate of 90 beat/min, left atrial enlargement and left ventricular hypertrophy.

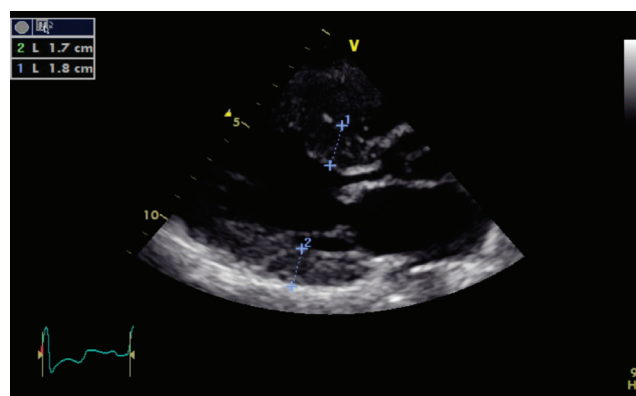


Figure 2 – Parasternal Long Axis view showing a sub-aortic membrane 1cm below the aortic valve severe concentric left ventricular hypertrophy more marked at the septum

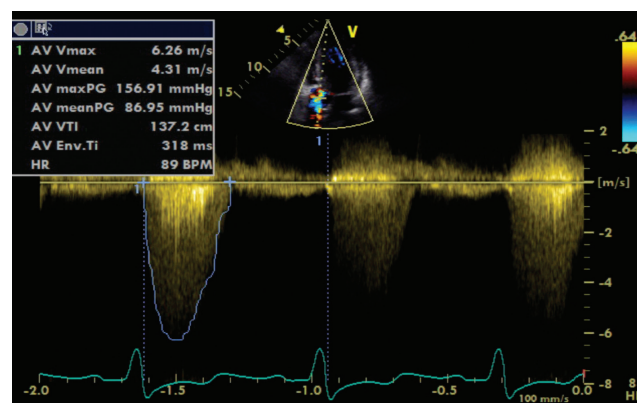


Figure 3 – Continuous Doppler Tracing across the aortic valve showing elevated mean and maximum pressure gradients with no late peaking characteristic of dynamic obstruction

LVH with maximal thickness of 17 mm at the septum resulting in LVOT obstruction. There was no concomitant coronary artery disease and no other cardiac congenital abnormalities.

The patient was presented in a multidisciplinary heart team meeting which recommended cardiac MRI to further evaluate the hypertrophy followed by surgical resection of the membrane and septal myectomy.

Conclusion

This case reminds the clinicians to carefully evaluate for alternative causes of LVOT obstruction especially sub-aortic membrane as a cause of symptoms mimicking HOCM.

Submission ID: 28

TRANSCATHETER CLOSURE OF UNLIGATED VERTICAL VEIN IN POST OPERATIVE TAPVC REPAIR CAUSING PHYSIOLOGICAL LEFT TO RIGHT SHUNT

RAJESH KUMAR

Purpose

Device closure of unligated vertical vein in post TAPVC repair

Method

3 patients with mean age of 7 and mean weight of 14kgs presented with NYHA class II symptoms. Echo showed RA, RV volume overload with no venous obstruction with mild to moderate PAH with an unligated vertical vein draining

Findings

All 3 patients underwent CT which revealed a dilated vertical vein cath study shows mean Pre procedure step up of 10 \pm 2 % mean

PA pressures 25 ± 4 all three underwent device closure of vertical vein using vascular plug. Mean vertical vein diameter was 13.5 mm. Mean length vertical vein was 22 mm. post closure stepup was 1.5 ± 1 mean PA was $12 \pm$ devices used were mean 17 ± 3

Result

Mean follow up 3 months all three patients had significant reduction in RA, RV sizes. Device closure of unligated vertical vein in post TAPVC is safe and feasible in patients with RV volume overload.

Keywords: Vertical vein closure

Submission ID: 29

TRANSCATHETER CLOSURE OF LARGE TUBULAR HYPERTENSIVE PDAS IN SMALL CHILDREN USING MFO DEVICE AS EFFECTIVE ALTERNATIVE TO DOUBLE DISK MUSCULAR VSD OCCLUDERS

RAJESH KUMAR

Introduction

A large (Complicated) PDA can cause severe pulmonary hypertension (PHT) either due to increased pulmonary blood flow or increased pulmonary vascular resistance (PVR).

Background

Large tubular HYPERTENSIVE PDA cases are usually closed by double disk Muscular VSD occluders. Among the patients, difficult subsets including small children less than 6 kg with large ductus requiring bigger sheath and interrupted IVC patients. Konar MFO devices was effectively used as an alternative to double disc muscular VSD occluders in small children and difficult subset cases.

Aim

To see the outcome of device closure of large Hypertensive tubular PDA in small children with Lifetech Konar MFO device.

Materials and methods

It is a prospective study conducted in MGM Health care, Chennai. Total 38 patient reported with PDA from Aug 2019 to May 2023 Period.

All the cases had been selected from history, Physical examination, chest X-ray, ECG, 2-D and Doppler Echocardiography. Median age was 4 months (1 month to 6 years), median weight 4.5 kg (2.2 to 18 Kg), 12 cases had down syndrome and 14 cases had Interrupted IVC. Narrowest PDA diameter was 6 to 12 mm, Median 9 mm, 20 cases were male and 18 were female. Pulmonary: systemic blood flow various from 1.1:1 to 6.7:1 in room air. Pulmonary vascular resistance ranged from 4.5 to 12 wood units. Pulmonary arterial pressure ranged from 60/40(46) to 170/90(105) mm of Hg. Systemic pressure ranged from 60/45(49) to 180/95(110) mm of Hg. Minimum device size was 8/6 mm, maximum 14/12 mm.

Result

complete Occlusion was achieved in 562 cases. RV Pressure reduced to normal by three months in all except three.

Conclusion

Transcatheter closure of PDA cause minimum hemodynamic impairment even in tubular large cases and it may be performed as outpatient basis in children more than one year of age. It can be performed safely under deep sedation. In our centre we keep the patient in observation ward for 24 hours. An Echocardiography is done routinely before discharge. This study supports that huge tubular PDA with severe PHT can be closed safely in all age groups with conventional devices with some alteration and modification of shapes or with double disc devices. However we will follow up these cases up to three years to observe the long term outcome of all cases.

Submission ID: 30

TRANSCATHETER DEBANDING OPTIONS FOR SWISS CHEESE VSD

RAJESH KUMAR

Background

Although primary definitive repair of congenital heart disease has become the preferred management approach, pulmonary artery banding (PAB) remains a valuable palliative procedure used to restrict pulmonary blood flow in conditions with Swiss Cheese VSDs and large Muscular VSDs. However, when the band is to be removed and close the residual VSD, another surgical intervention is usually required.

Methods

To describe percutaneous removal of pulmonary artery band and device closure of residual muscular VSDs.

Results

Between 2019 and 2023, 15 patients underwent PAB. Of these, we attempted balloon debanding of the pulmonary artery in four patients. At the time of the procedure, the average age of patients was 60 ± 6.24 months, and their average weight was 12.37 kg. Band removal via catheter was successful in all cases and was associated with an adequate reduction in pressure gradient across the pulmonary artery band site (average of 71.67 ± 12.58 to 23.67 ± 2.89 mm Hg). 3 patients post band removal showed significant Qp/Qs due to muscular VSDs and underwent device closure. None of the patients experienced complications during or after the procedure. Follow-up data after discharge provides reassuring and satisfactory results.

Conclusion

Based on our findings, we suggest that transcatheter management of post PA banding for swiss chess VSDs with percutaneous removal of the pulmonary artery band and device closure of residual VSDs might be a safe and effective alternative to redo surgery. However, studies with a larger sample are required for further clinical implementation of the technique.

Submission ID: 31

CHALLENGES AND IMPLICATION OF ATYPICAL PRESENTATION OF ACUTE MYOCARDIAL INFARCTION IN PERIPHERAL SUB-SAHARAN AFRICA: A CASE REPORT.

SYLVIAH CHELAGAT

Background

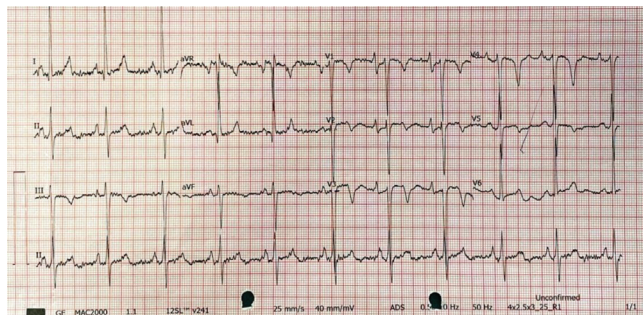
Acute myocardial infarction (AMI) is a leading cause of mortality worldwide, with increasing burden in sub-Saharan Africa. Timely diagnosis and management are crucial for improving patient outcomes. However, delayed suspicion and intervention in this region contribute to higher morbidity and mortality rates. Limited data and standardised diagnostic criteria pose challenges to developing effective prevention and treatment strategies. Gender disparities in seeking medical attention for AMI symptoms further complicate the situation. This case study focuses on a 50-year-old female patient in Kenya with a delayed AMI diagnosis, highlighting the challenges faced in sub-Saharan Africa, particularly among women.

Methods

A 50-year-old non-diabetic female with hypertension presented to The Karen Hospital with two months of chest pain. Initially, an ECG was normal, leading to a diagnosis of cervical spine nerve impingement. Despite physiotherapy and pain management, symptoms persisted. At The Karen Hospital, an ECG revealed an anterior infarct, prompting further investigation. A 2D echo showed septal akinesia, and an angiogram revealed a 95% stenosis of the left anterior descending artery. Percutaneous coronary intervention (PCI) was performed, followed by post-PCI observation and discharge with prescribed medication.

Results

The patient responded well to the percutaneous coronary intervention (PCI) procedure. She experienced successful revascularization of the left anterior descending artery and showed improvement in her cardiac function. Following the intervention, the patient remained asymptomatic without any chest pain. She diligently followed the prescribed medication regimen and participated in cardiac rehabilitation. Regular check-ups were scheduled to monitor her progress, and she continued to do well during the follow-up period.



Conclusion

Efforts to improve diagnostic and management strategies for AMI in sub-Saharan Africa are essential. Increasing awareness among healthcare professionals regarding atypical AMI presentations, improving access to diagnostic tools like ECG and echocardiography, and enhancing availability of PCI are crucial steps. A coordinated approach involving healthcare providers, policymakers, and stakeholders is necessary to address these challenges and improve outcomes for AMI patients in sub-Saharan Africa. The successful outcome of the percutaneous coronary intervention in this case highlights the importance of timely and appropriate interventions in improving patient prognosis and quality of life.

Submission ID: 32

PATIENT CHARACTERISTICS AND TREATMENT OUTCOME AMONG HYPERTENSIVE PATIENTS IN KENYA 2023-CROSS-SECTIONAL STUDY

YUSUF MAHAT

Background

As the global burden of NCDs continues to rise, tracking treatment outcomes is a priority goal of public health programs. Two-thirds of the burden of NCDs and its complications are reported in Low- and Middle-Income Countries (LMIC). It is therefore essential to determine the demography of hypertensive patients and identify factors linked to poor treatment outcome.

Method

The study was conducted in nine counties that have implemented electronic health records system (SPICE) for hypertension and diabetes management, from March 2021- March 2022. SPICE is an end-to end platform that provides custom dashboards for real-time tracking of both individual and aggregate patient data and generates customized Ministry of Health reports, which are then uploaded into the country's DHIS2 platform. After descriptive analysis we used logistic regression to establish predictors of patient characteristics and treatment outcome among hypertensive patients.

Results

We analyzed data for 42,483 hypertensive patients. 10,692(25%) were male and 31,791(75%) were female. Blood pressure was significantly better controlled among women as compared to men (72.8% vs 71.5%; P value =0.04). Poor control was more significant

among the obese as compared to the participants with normal BMI (29.7% vs 25.6%; P value < 0.0001). Lower control rate was noted among the age group 41 –60 yrs. though not statistically significant. Patients with only hypertension achieved better controls of their blood pressure as compared to those who had a comorbidity of diabetes (72.5% vs 66.6%; P value = 0.0001).

Conclusion

The study provides a national insight on hypertensive patient's characteristics and their effect on control levels. Poor control is noted among men and patients with high BMI highlighting the need for specific gender-based interventions and nutritional support and counselling.

Submission ID: 33

NON-INVASIVE DIAGNOSTIC MEASURES IN CARDIAC AMYLOIDOSIS: A CASE SERIES

WAGANA L. N. MURIITHI, GACHOYA ALEX

Background

In the past, cardiac amyloidosis was considered a rare condition due to the paucity of data available on the subject. This resulted in possible underdiagnosis and, consequently, a lack of accurate epidemiological information regarding the condition. This case series aims to share our experience in monitoring three patients suspected to have the condition and subsequently underwent non-invasive diagnostic measures for evaluation.

Case Series

Case 1: T.W.G. an 80-year-old male hypertensive patient with poor drug compliance and poor follow-up presented with uncontrolled blood pressure. An initial diagnosis of hypertensive heart disease was made. However, he later presented with worsening signs and symptoms of heart failure despite being on an adequate treatment regimen. Therefore, he was sent for further non-diagnostic evaluations including a cardiac magnetic resonance imaging which favored infiltrative cardiomyopathy as the more likely diagnosis.

Case 2: B.W.G. a 73-year-old female referred for a cardiologist's review after presenting with signs and symptoms of heart failure. The initial cardiac evaluation indicated a probable diagnosis of infiltrative cardiomyopathy. She was, therefore, sent for other non-invasive diagnostic tests which further supported the initial findings.

Case 3: S.K.G. an 80-year-old with asymmetric ventricular hypertrophy on initial cardiac evaluation. Subsequently, he was referred for cardiac magnetic resonance imaging. However, the results did not align with those typically associated with infiltrative cardiomyopathy, leading to the discontinuation of further evaluation.

Conclusion

Significantly, the outlined case series suggests that a potential non-invasive diagnostic pathway for cardiac amyloidosis could be established. This pathway would greatly depend on heightened physicians' awareness and clinical suspicion of the condition, inevitably, changing the narrative of this previously underdiagnosed condition. As a result, it would pave way for the continued research and pharmacological advancements aimed at reducing the morbidity and mortality rates associated with this complex condition.

Introduction

Amyloidosis is a multisystem disorder in which specific precursor proteins misfold and aggregate into insoluble amyloid fibrils which get deposited in specific tissues [9]. This pathologic process often results in organ dysfunction, with the heart, kidneys, GI tract, and the nervous system being the most commonly affected organs. Cardiac amyloidosis (CA) occurs when the aforementioned proteins get deposited in the extracellular space of the myocardium [3, 12]. The two common types of CA include immunoglobulin light chain amyloidosis (AL) and transthyretin amyloidosis (ATTR) [1, 3, 6, 12].

The precise epidemiology of CA is uncertain owing to the rarity of cardiac involvement of amyloidosis [4]. However, studies indicate that this may be attributed to significant underdiagnosis [2, 6, 11]. Therefore, increased awareness, clinical suspicion, and improved non-invasive diagnostic capabilities are expected to change this in the future [3]. This article aims at presenting three case reviews of patients suspected to have cardiac amyloidosis and, subsequently, underwent non-invasive diagnostic evaluations for the same.

Case One

Mr T.W.G. an 80-year-old patient living with hypertension on medication presented to the clinic with uncontrolled blood pressure. However, he had poor drug compliance and poor follow-up. Initial electrocardiogram (ECG) and echocardiogram (Echo) findings revealed moderate concentric LVH with grade II diastolic dysfunction and a mildly dilated LA. Simpson's LVEF was 54.9%. All the aforementioned were in keeping with hypertensive heart disease. His antihypertensive medications were reviewed and changed to target optimal BP control (<130/80 mmHg) [10]. He was also advised on the need to adhere to his drug regimen, do regular follow-ups, and do home BP charting.

Notably, 6 months later, Mr. T presented with limiting exertional dyspnea, bilateral lower limb swelling, and dry cough. Significant findings in a repeat echocardiogram included deteriorating LVEF (43.7%) with moderate LVH, grade III diastolic dysfunction, and global hypokinesis of the LV ventricle. Due to the reduced LVEF, Mr. T was started on anti-failure medication with the plan for a coronary angiogram to rule out coronary artery disease (CAD) as a contributor to the low LVEF.

A year later, Mr. T progressively worsened into NYHA class IV exertional dyspnea. He had troublesome bilateral upper limb peripheral neuropathies limiting his ability to perform several tasks despite being on medication. Further evaluation revealed that he was having bilateral carpal tunnel syndrome with median nerve neuropathy and was planned for median nerve release. An Echo done during this period showed that the LVEF had worsened to 25-30%, global hypokinesis of the LV ventricle, grade IV (restrictive) diastolic dysfunction, and severe asymmetric LV hypertrophy. His NTproBNP was elevated at 1297 pg/ml.

This prompted us to think of an infiltrative cardiomyopathy. Hereby, he was sent for a cardiac magnetic resonance imaging (CMR) and the results confirmed that there were features suggestive of an infiltrative cardiomyopathy, likely cardiac amyloidosis. Other findings included a reduced LV systolic function (36%), and mild tricuspid and mitral regurgitation with moderate bi-atrial enlargement.

To follow it up, Mr. T was sent for nuclear medicine bone scans and the cardiac tracer uptake was suggestive of ATTR cardiac amyloidosis. In addition, free light chains were done around the same period revealing high S-Kappa Free Light Chains with a high Kappa/Lambda ratio.

Case Two

Mrs. B.W.G. a 73-year-old female referred for a cardiologist's review after presenting with bilateral lower limb swelling, irregular heart sounds, and cardiomegaly on a chest radiograph. A cardiac evaluation using an ECG/Echo revealed sinus arrhythmia, moderate asymmetric LVH, RVH, with preserved LV systolic function (LVEF was 56%). Additionally, she had mild bi-atrial enlargement and mild tricuspid regurgitation with elevated pulmonary pressures. The transmitral spectral Doppler flow pattern was suggestive of impaired LV relaxation.

She was, subsequently, sent for a CMR whose summary findings included cardiomegaly with bi-atrial enlargement and diffuse LVH/RVH. Notably, the papillary muscles and inter-atrial and inter-ventricular septa were all diffusely hypertrophied. The LV systolic function was severely reduced with an ejection fraction of 37%. There was also altered blood pool kinetics with a reverse nulling pattern. Moreover, she was noted to have diffuse transmural left and right ventricle late gadolinium enhancement (LGE).

A serum profile electrophoresis with free light chains showed an elevated S-Kappa free light chain with a high normal Kappa/Lambda ratio. She was, however, unable to go for nuclear bone imaging owing to financial constraints.

Case Three

Mr. S.K.G. an 80-year-old male noted to have asymmetric LVH on a baseline ECG/Echo. Consequently, he was sent for CMR and the findings included cardiomegaly with severe RA dilatation, asymmetric LVH, wall motion abnormalities in LV (hypokinesia of IV septum: basal and mid-cavity). Furthermore, he had a reduced LVEF at 46%, moderate TR, mild MR, and mild pericardial effusion.

Here, further evaluation for possible cardiac amyloidosis was abandoned as the CMR was not convincing for an infiltrative cardiomyopathy. This is because there was no left or right ventricle LGE, no bi-atrial enlargement, no atrial septal thickening, no left ventricular outflow tract obstruction with no associated systolic anterior motion of the mitral valve. Furthermore, he was having a normal mitral valve E/A ratio not indicative of diastolic dysfunction unlike in patients with infiltrative cardiomyopathy [1, 11, 13].

Discussion

The sequence of events illustrated in the initial two cases establishes a diagnostic pathway and key findings in CA. This is evidenced by:

- i. Clinical presentation: Both patients are over 70 years with hypertension and symptoms of clinical heart failure. Such symptoms include progressive dyspnea, lower limb swelling, and dry nocturnal cough [1]. Additionally, bilateral upper limb peripheral neuropathies may be indicative of systemic involvement [3, 7]. This is because carpal tunnel syndrome has been shown to be one of the early diagnosis associated with ATTR CA [7].
- ii. Echocardiography Findings: The echocardiography findings are suggestive of infiltrative cardiomyopathy rather than hypertensive heart disease. These include worsening systolic and diastolic dysfunction despite adequate management of heart failure alongside well-controlled BPs [11]. Also, the asymmetric LVH with a speckled myocardium raised suspicions of infiltrative cardiomyopathy further [1, 13]. Notably, patients with CA have also demonstrated regional wall motion abnormalities with reduced longitudinal strain and this is evidenced by the noted global hypokinesis [1].
- iii. Cardiac Magnetic Resonance Imaging (CMR) CMR is increasingly being used as a critical noninvasive diagnostic measure in diagnosing CA [3, 14]. The CMR findings were consistent with infiltrative cardiomyopathy. Firstly, there was diffuse transmural left and right ventricle late gadolinium enhancement (LGE) which is considered a classical finding in CA [1, 12]. Also, some of these patients exhibited altered blood pool kinetics with a reverse nulling pattern which has been considered one of the accurate non-invasive methods of detecting CA [8]. Moreover, other findings such as hypertrophied left and right ventricles, valvular regurgitation, and bi-atrial enlargement can also be seen in CA [4, 14]. CMR also helps distinguish hypertensive from infiltrative cardiomyopathy [1, 14].
- iv. Nuclear bone scans The cardiac tracer uptake on the nuclear bone scans done was suggestive of ATTR CA. Notably, this indicates the presence of transthyretin amyloid deposits in the heart [12]. Radionuclide imaging has been shown to help distinguish between ATTR and AL amyloidosis and thus an integral part of the CA diagnostic chain [1].
- v. Natriuretic biomarkers and serum protein electrophoresis NT-proBNP is a biomarker associated with heart failure; elevated levels can indicate cardiac stress [2]. The noted elevated NTproBNP level further supports the presence of significant cardiac dysfunction. Notably, this marker has also proved imperative in monitoring the prognosis of CA patients [1, 17].

Lastly, elevated S-kappa free light chains with an increased Kappa/Lambda ratio are indicative of monoclonal gammopathy [16]. The combination of elevated free light chains and evidence of cardiac involvement supports the diagnosis of systemic amyloidosis. Importantly, the sFLC assay can also be applied as a prognosticating factor during the follow-up of these patients [6, 17].

All the aforementioned supports a diagnosis of CA, specifically ATTR CA. This diagnosis has been commonly misdiagnosed as hypertensive cardiomyopathy and, thus, underestimating its true prevalence [1]. This would, consequently, warrant the prescription of Tafamidis, which is an FDA-approved agent shown to increase

survival and reduce hospitalization rates in patients with ATTR CA [5, 12, 15].

Importantly, the definitive confirmation of the amyloid subtype (AL or ATTR) typically requires histopathological examination of affected tissues [3, 6, 9, 11]. The amyloid deposits are usually confirmed by their apple-green birefringence when stained by the Congo red stain and then viewed under polarized light [4, 9]. Nonetheless, in some cases, the clinical presentation, noninvasive imaging findings, and supportive laboratory results can strongly suggest a specific subtype. Timely recognition allows for appropriate management without the need for invasive procedures that may have fatal complications [9].

Conclusion

With probable previous underdiagnosis, physicians should be increasingly aware and have a high index of suspicion about the presence of the disease. Furthermore, with the advancement in non-invasive diagnostic measures, the previous underdiagnosis and delayed diagnosis may be averted. With the approval of a few pharmacological agents like Tafamidis, early diagnosis and management would alter disease progression and even mortality from heart failure. Hopefully, ongoing research and advancements in medical therapies hold promise for further improving the management of this complex condition.

Abbreviations

LVH- Left ventricular hypertrophy
RVH- Right ventricular hypertrophy
CA- Cardiac amyloidosis
LVEF- Left ventricular ejection fraction,
CMR- Cardiac magnetic resonance imaging,
sFLC- serum free light chains
LGE - Late gadolinium enhancement

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Submission ID: 34

REACHING THE UNREACHED: HOW THE MATER HOSPITAL IN KENYA IS BRIDGING A HUGE GAP IN RHEUMATIC FEVER (RF) AND RHEUMATIC HEART DISEASE (RHD) PREVENTION, DIAGNOSIS AND TREATMENT

CHITIRA AGNES.

MATER HOSPITAL, CATHLAB.

Background

The Global burden of rheumatic heart disease in poor and marginalized population continues to be high with lack of basic primary prevention resources and modalities leading to late presentation including heart failure and high-risk surgical candidates. In Kenya diagnostic and curative services for established RHD is only available in a few counties. To address this disparity outreach programs aimed at community education and participation of preventive RF/RHD was emphasized and education pamphlets left with local administrative authorities for continuity.

Method

A school based rheumatic fever and rheumatic heart disease prevention outreach program which offers educational, preventive, diagnostic and curative services to school children in RF/RHD endemic parts of Kenya.

Results

The Program has been running for the last 15 years from 2008 to date. Out of 47 counties in the region 32 of them have been covered (68%). Screening was done in 84 schools and 5 regional hospitals. A total of 140141 children were screened of which 16119 (11.5%) received primary prophylaxis whereby children were examined and treated for pharyngitis and dental carries, 202 (0.14%) required secondary prophylaxis. Of the 2837(2%) who required echocardiography a total of 433(15.2%) had established rheumatic Fever / rheumatic heart disease and were referred for close follow up and surgical intervention.

Conclusion

Analysis from the outreach program showed a high prevalence of RHD /RF of 15.2%. Certain localities have been identified as “hot spots” subsequently informing local government budget prioritization. Recognition and targeting of rheumatic fever hot spots for escalation of rheumatic fever prevention. Education involved recognition and treatment of sore throat, attitude change to recognize sore throat as something potential and not to ignore pharyngitis. Prompt treatment was given to the affected. Follow up camps and contact follow ups of the affected patients. Pamphlets and posters were issued to hot spot areas for continued education.

Submission ID: 35

TAKAYASU ARTERITIS PRESENTING AS ACUTE ISCHEMIC STROKE AND CORONARY ARTERY DISEASE

ALBERT NYANGA

AGA KHAN UNIVERSITY HOSPITAL, NAIROBI

Background

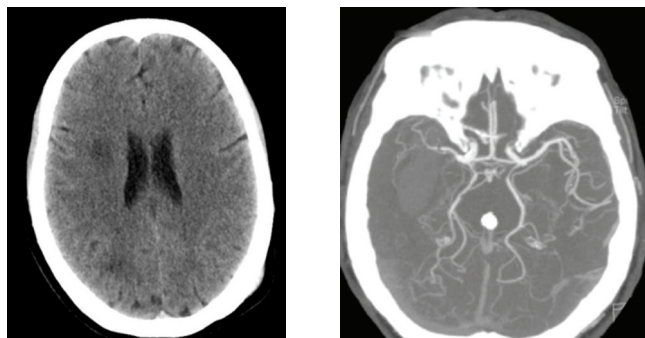
Takayasu arteritis is a chronic granulomatous large vessel vasculitis, that particularly the aorta and its proximal branches. It is a rare disease, most prevalent among females between the ages of 10 – 40 years.

Case description

36-year-old male presented to the ER, with a 3-day history of chest pain and a 2-hour history of sudden onset left sided body weakness. His past medical history included Takayasu arteritis diagnosed in 2012.

On physical examination, he was noted with left sided UMN facial nerve palsy and left sided dense hemiplegia of the UL and hemiparesis of the LL (grade 3 for the extensors and grade 4- for the flexors). With right lower limb ataxia, loss of tactile sensation on the left side and left temporal hemianopia.
BP 105/62mmHg, HR 72bpm.

A CT head and Angiography:



Summary of CT Head and Angiography

Right MCA acute infarct (hyper dense proximal M1 segment of the right MCA with a tight stenosis) in keeping with an acute thrombus. An assessment of an acute cerebral infarct was made. He was thrombolysed and scheduled for thrombectomy.

Thrombectomy report

PT graphix guide wire 0.014 IN *182 cm passed through the thrombus. A Solitaire X 6mm*30mm stent was used to successfully retrieved the clot. Troponin came back at 7, 000 (17, 968 from admission)

Due to persistently elevated BPs, he was then referred to the Cardiology clinic, where the following vital signs were recorded.

	08/05/23 14:29 EAT	08/05/23 16:22 EAT	08/05/23 16:23 EAT	08/05/23 16:25 EAT	08/05/23 16:28 EAT
Height	1.75 m				
Weight	80.9 kg				
BMI	26.4				
Body Mass Index (BMI) Classification	Overweight				
BSA	2.00				
BP	109/66	137/82	133/85	196/128 H	192/118 H
Blood Pressure Location	Rt brachial	Lt brachial	Rt brachial	Lt femoral	Rt femoral
Position	Sitting	Sitting	Sitting	Sitting	Sitting
Respiration	18	17	17	17	18
Pulse	61	51 L	50 L	53 L	57 L
Pulse Source	Pulse Oximetry			Pulse Oximetry	Pulse Oximetry
Pulse Rhythm	Regular			Regular	Regular
Temp	36.5 C	36.5 C	36.5 C	36.5 C	36.5 C

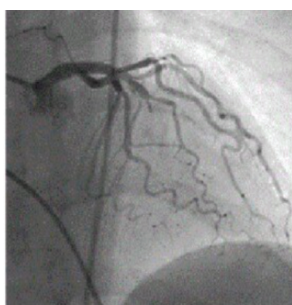
To determine his blood pressure and adequately tailor his anti-hypertensive medication, it was determined that he underwent further testing.

Full CT aortogram

Findings:

Dilatation of the left subclavian artery at its origin from the aortic arch. Circumferential wall thickening of the left subclavian at the same level measuring up to 7 mm, extending 3.2 cm distally. Left renal artery stenosis with near complete occlusion consistent with Takayasu arteritis Type IIb.

Cardiac catheterization



Findings: Conclusion: Mid LAD CTO, central aortic pressure of 152/96mmHg.

Conclusion

Takayasu arteritis is a rare systemic vasculitis that primarily affects the aorta and its major branches. Diagnosing Takayasu arteritis continues to be a challenge. The patient presented had a diagnosis of Takayasu arteritis, and suffered coronary artery disease followed by an ischemic stroke.

Submission ID: 36

PHYSICIANS' ADHERENCE TO GUIDELINES ON PRESCRIPTION AND UPTITRATION OF MEDICAL THERAPY FOR HEART FAILURE WITH REDUCED EJECTION FRACTION

WILLY MUCYO

Background

High prescription rate and uptitration to target dose of guideline-directed medical therapy (GDMT) for heart failure with reduced ejection fraction (HFrEF), for eligible patients, is associated with reduced mortality and hospitalization due to heart failure. The aim of the study is to determine the physicians' adherence rate to current GDMT prescription and uptitration guidelines at a tertiary care university hospital in Nairobi, Kenya.

Methods

We reviewed medical files of all HFrEF patients admitted from January 2020 to December 2022. We calculated the Guideline Adherence Index (GAI) and the Quality of Adherence to guideline recommendations for LIFE-saving treatment in heart failure (QUALIFY) scores. From worst to best, GAI scores range from 0 to 100%, while QUALIFY scores range from 0 to 1. GAI is the proportion of patients for whom GDMT was prescribed among eligible patients, while the QUALIFY score is calculated using an algorithm that takes into account the appropriateness of the prescription and the uptitration to target dose.

Table 1. Physicians' adherence scores for GDMT prescription and uptitration guidelines.

Physicians' GAI scores at discharge						
	Prescription rate for eligible patients at discharge (%)					
	Cardiologist #1	Cardiologist #2	Cardiologist #3	Cardiologist #4	Other	p value (Chi-Square)
ACEI/ARNI/ARB	42 (60.8)	41 (68.3)	16 (69.5)	7 (38.8)	26 (43.3)	0.017
Beta blocker	66 (82.5)	47 (70.1)	24 (88.8)	11 (45.8)	39 (57.3)	<0.001
MRA	30 (39.4)	28 (42.4)	13 (54.1)	12 (52.1)	26 (40.6)	0.636
Physicians' GAI scores at 6 months follow-up						
	Prescription rate for eligible patients at 6 months (%)					
	Cardiologist #1	Cardiologist #2	Cardiologist #3	Cardiologist #4	Other	p value (Chi-Square)
ACEI/ARNI/ARB	39 (84.7)	36 (80)	9 (60)	0 (0)	11 (55)	0.001
Beta blocker	48 (88.8)	40 (83.3)	15 (88.2)	2 (33.3)	18 (64.2)	0.002
MRA	35 (63.6)	36 (70.5)	8 (53.3)	1 (16.6)	10 (41.6)	0.027
SGLT2-i	18 (47.3)	17 (43.5)	3 (27.2)	0 (0)	3 (27.2)	0.532
Physicians' QUALIFY scores at 6 months follow-up						
	Mean QUALIFY score at 6 months (SD)					
	Cardiologist #1	Cardiologist #2	Cardiologist #3	Cardiologist #4	Other	p value (Kruskal Wallis)
ACEI/ARNI/ARB	0.48 (0.42)	0.55 (0.42)	0.53 (0.40)	0.36 (0.44)	0.16 (0.40)	0.082
Beta blocker	0.57 (0.39)	0.64 (0.35)	0.55 (0.38)	0.7 (0.36)	0.2 (0.44)	0.023
MRA	0.34 (0.31)	0.36 (0.32)	0.38 (0.27)	0.33 (0.36)	0.08 (0.20)	0.196

Table 1: GAI and QUALIFY scores at discharge and at 6 months follow-up. GAI: Guideline Adherence Index; QUALIFY: Quality of Adherence to guideline recommendations for LIFE-saving treatment in heart failure; ACEI: angiotensin receptor blocker; ARNI: angiotensin neprilysin inhibitor; MRA: mineralocorticoid receptor inhibitor; SGLT2i: Sodium-Glucose Transport Protein 2 (SGLT2) Inhibitor, SD: standard deviation.

Results

Medical files of 280 patients with HFrEF were reviewed. The mean age was 62.8 (± 14.2); 58.9% were men; 40.6% had new onset HFrEF; and 35% had ischemic heart disease. MRA and SGLT2i had the lowest adherence scores. GAI scores were ACEI/ARNI/ARB: 66.2%, beta blocker: 71.7%, MRA: 42.6%, at discharge, and 86.3%, 84.4%, 61.2% at 6 months follow-up. Mean QUALIFY scores were 0.48 (± 0.42), 0.57 (± 0.39), and 0.34 (± 0.31), respectively. GAI score SGLT2i was 38.9% at 6 months. Adherence scores varied

significantly between physicians. At six months follow-up, 43.8% of patients had been readmitted at least once and 8.8% had died.

Conclusion

There is need to design interventions to increase adherence to GMDT guidelines, with special attention to MRA and SGLT2i drug classes. The variations in adherence rates between physicians requires follow-up studies on individual practices regarding GDMT prescription and uptitration.

Keywords (MeSH): Heart failure with reduced ejection fraction, guideline-directed medical therapy, guideline adherence

Submission ID: 37

A NORMAL CORONARY INTERVENTION TURNED IN TO A NIGHTMARE & HOW WE CAME OUT

WILLY MUCYO

Background

50 years male presented with acute AWWMI
ECG-SNR, ST elevation in anterior leads with reciprocal changes.
ECHO-AWMA in LAD territory, EF = 45%, normal RV function

Methods

CAG-CAD-Double vessel disease
Primary PCI to LAD done, after stenting diagonal branch got occluded. Wired with fielder FC, at the time of Ostial diagonal ballooning the LAD vessel got occluded with thrombus that extended to left main LCX, major diagonal.
Patient went in to VT reverted with cardio version followed by CPR. Intubated, started inotropes. Left main was reengaged with EBU 3.5-6F catheter and wired the vessels during CPR. Milking of Balloon was done in LM, LAD, & LCX

Results

TIMI-II flow in LAD & TIMI-III flow in LCX & Diagonal
Tirofiban infusion started.
Patient shifted to CCU with inotropes and Mechanical Ventilator.
Extubated successfully after 2 days
Now am following up the patient with normal LV function.

Conclusion

It was a real nightmare with a simple primary PCI to LAD to unexpected propagated thrombus to left main without any surgical backup in a region.

Submission ID: 38

DUCHENNE MUSCULAR DYSTROPHY

K. MWAZO, AISHA A, J. MKILO, S. KIWO, B. NDUATI

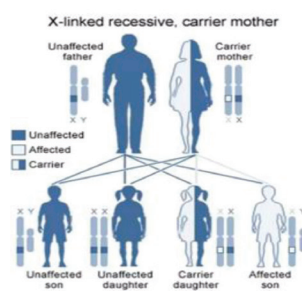
Background

Duchenne muscular dystrophy (DMD) is a genetic disorder characterized by progressive muscle degeneration and weakness due to alterations of a muscle protein called dystrophin, it occurs primarily in males, though in rare cases may affect females. Clinical presentation is associated with dilated cardiomyopathy (heart-disease) with little or no clinical skeletal, or voluntary, muscle disease. Early signs may include delayed motor milestones. Diagnosis of DMD is based on the symptoms, clinical exam, Muscle biopsy under a microscope. The genetic testing may also help differentiate from other muscular dystrophies.

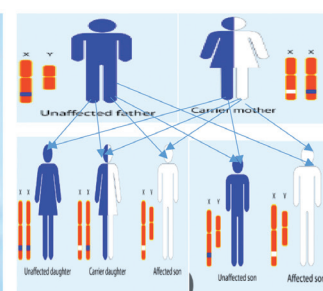
Methods

We present a 16-year-old male patient diagnosed with a muscular dystrophy and dilated cardiomyopathy. He had a normal milestone up to the age of 4 then developed muscle weakness finally becoming wheelchair bound by the age of 11. He is the last born of 4 siblings

DMD pedigree

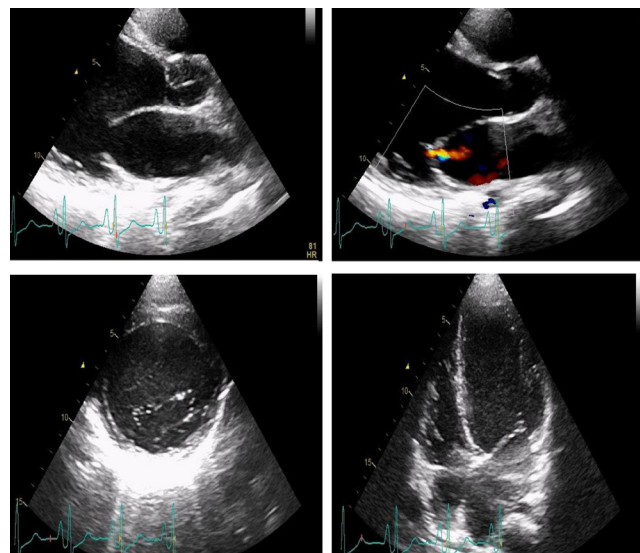


Patients Pedigree



with the second born boy dying at the age of 15 years from a similar illness, two other siblings a boy and a girl are clinically normal with a normal screening echocardiograms. On enquiry there is a maternal male cousin with muscular dystrophy.

Blood tests done revealed a normal blood count, thyroid profile and antinuclear antibody test. Iron levels were low with an elevated CRP, PRO-BNP, and creatinine kinase. The Electrocardiogram revealed sinus mechanism with a narrow QRS complex, 2D Echocardiogram revealed dilated cardiomyopathy with severe reduced systolic function LVEF 15-20%.



Conclusion

The commonest cause of cardiomyopathies causes in Africa are hypertension, diabetes, Alcohol, Ischaemic heart disease and Etc. Other genetic causes are hypertrophic cardiomyopathy and muscular dystrophies. Therefore, a Cascade screening for affected family members.

Submission ID: 39

A CASE REPORT ON THE MANAGEMENT OF CARDIAC DISEASE IN PREGNANCY IN A PUBLIC HOSPITAL IN KENYA.

SHEILA MUKARYE, KIERAN MWAZO

Background

Cardiac disease in pregnancy is common in Kenya with almost a ten-fold increase in mortality. Rheumatic Heart Disease is the commonest etiology affecting women in the reproductive age almost precluding pregnancy. There is relative increase in access to cardiac care, with more open heart surgery and mechanical prosthetic valves being implanted, necessitating use of warfarin which is the better anticoagulant although with risk of fetal embryopathy in a dose dependent manner. Pre-pregnancy planning is a rarity, with most women presenting unbooked. Structured evaluation and monitoring by a multidisciplinary team can guarantee good outcomes.

Methods

We present a case of a 32-year-old female who had mitral valve replacement after her first pregnancy at age 28; who now sought care 10 weeks into her second pregnancy. She was on warfarin 5mg daily (except Wednesdays 7.5 mg), enalapril 5 mg OD, digoxin 0.125mg OD and furosemide 40 mg OD. A multidisciplinary team involving an adult and pediatric cardiologist seasoned in fetal echocardiography, obstetrician and anesthesiologist was formed. Serial obstetrical and fetal echocardiograms were done to assess fetal malformations and cardiac anomalies, as well as serial INRs maintaining a therapeutic INR. Warfarin dosage was maintained at 5mg OD, digoxin and enalapril stopped, furosemide taken as required. Folic acid and junior aspirin were introduced. She was booked for elective cesarean at thirty-eight weeks. Warfarin was bridged with enoxaparin 5 days to surgery and was stopped 24 hours prior. She proceeded to have a successful delivery.

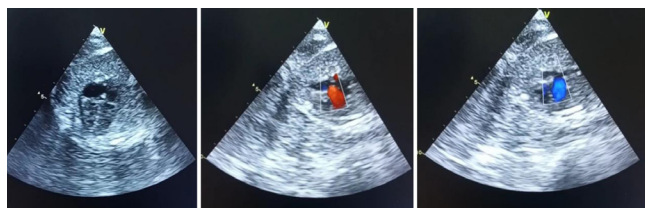


Image: Fetal Echocardiogram during routine checkup.

Conclusions

Cardiac disease in pregnancy is common in Kenya with a high mortality. Pre-pregnancy evaluation is ideal and tertiary referral hospitals should set up high risk cardiac obstetric clinics which can guarantee multidisciplinary care with good outcomes.

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Submission ID: 40

UTILITY OF MULTIMODALITY IMAGING IN PROSTHETIC VALVE ASSESSMENT

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Background

Multimodality imaging that includes Chest X-ray (CXR), Cinefluoroscopy, Transthoracic and transoesophageal echocardiography, CT scan and MRI are the standard of care when assessing prosthetic heart valve (PHV) malfunction. We present a case study to demonstrate the role of multimodality imaging in PHV.

Methods

We reviewed a 25-year-old female with a history of rheumatic heart disease who underwent mitral valve repair in 2012 and aortic valve replacement in 2016 and was discharged on warfarin with no regular follow-up. In 2023, she was admitted with progressive exertional dysnoea and syncopal episodes and was found to have a sub therapeutic INR of 1.2. Auscultatory findings included pansystolic and diastolic murmurs. A 2D echocardiogram prior to admission revealed a well seated aortic valve prosthesis with reduced occluder motion and elevated transaortic gradients (AVmaxVel 5.6m/s AVmean PG 89mmHg,) with moderate AR and moderate MR. A bedside echo showed apical aneurysmal dilatation with poor contractility (LVEF 30-35%). Aortic valve malfunction was

suspected. CXR showed valve prostheses in the mitral and aortic positions. Fluoroscopy revealed abnormal aortic valve prosthesis occluder motion which were stuck in the closed position. TOE further confirmed these findings. In the absence of onsite open heart surgery we elected to infuse a thrombolytic streptokinase but unfortunately the patient demised

Results

Doppler echocardiography is the method of choice, with TOE preferred over TTE in presence of technical difficulties. Cinefluoroscopy has a complementary role in evaluating disc mobility of mechanical PHVs and valve ring structure, Cardiac CT permits visualization of occluder motion in mechanical valves. CMR may be useful especially when TTE is non-diagnostic and TOE is undesirable. Nuclear imaging currently has very limited application in the evaluation of PHV other than in the setting of suspected infective endocarditis.

Conclusion

Multimodality imaging in assessing PHVs especially in technical difficulties/complications can provide incremental information vital for proper management.

Submission ID: 41

UNUSUAL PRESENTATION OF AN ANOMALOUS RIGHT CORONARY ARTERY

CHEBET CHEPKWONY

Background

The incidence of abnormal aortic origin of the coronary arteries is low with reported values of approximately 0.64 percent of births and 0.17 percent in asymptomatic children and adolescents. In the anomalous aortic origin of the right coronary artery (AAORCA), the anomalous right coronary artery (RCA) can either originate from the pulmonary artery, the ascending aorta, left ventricle, the left anterior descending artery, the left circumflex artery, the posterior sinus of Valsalva, or from the left sinus of Valsalva.

The RCA arising from the left sinus of Valsalva is one of the most common subtypes. AAORCA can then undergo 3 different courses: a high inter-arterial course between the aorta and pulmonary artery, a hypoplastic anomalous orifice with shorter inter-arterial course or a low inter-arterial course between the aorta and right ventricular outflow tract.

Sudden Cardiac Death [SCD] and major adverse cardiac events like arrhythmias that could lead to SCD were found to be significantly higher in patients with a high inter-arterial course and on rare occasions angina and ischemia.

Case presentation

A 38 year old male patient presented to us with worsening anginal pain with difficulty in breathing for two weeks. His chest pain score was at 7/10 at rest. The chest pain was relieved with nitroglycerin spray but he was having breakthrough continuous chest pain. He had no significant past medical history. Initial troponin level and subsequent values were normal. Electrocardiogram [ECG] showed normal sinus rhythm on admission. His 2D Echocardiogram was unremarkable. ECG gated Computerized Tomographic Coronary Angiogram showed an anomalous origin of his right coronary artery from the left coronary sinus with proximal inter-arterial course between the aorta and pulmonary trunk. The RCA was dominant and had a slit like appearance at origin. Left heart catheterization showed acute take off of RCA with difficulty to deliver equipment for stenting. He underwent successful ex-plantation and re-implantation of the right coronary artery with uneventful recovery and subsequent discharge home.

Conclusion

Anomalous coronary artery with a malignant inter-arterial course is a very rare. It also rarely presents with angina and ischemia. The usual presentation is sudden cardiac death (SCD). Treatment options include open heart surgery with ex-plantation and re-implantation of the anomalous coronary artery.

Submission ID: 42

MITRAL CLIP IN FUNCTIONAL MITRAL REGURGIATION; A CASE REPORT

FAVOUR KEMUNTO, REDEMPTAR KIMEU, CHARLES KARIUKI

Introduction

Functional mitral regurgitation is a common complication of ischemic cardiomyopathy. Left ventricular remodeling distorts the normal mitral valve anatomy and function leading to a vicious cycle of mitral regurgitation, volume overload and annular dilation. Transcatheter mitral valve repair has a mortality benefit among symptomatic heart failure patients with moderate to severe mitral regurgitation despite optimal guideline directed medical therapy.

We describe a case of a 68-year-old female who had an anterior STEMI with a background of multiple cardiovascular risk factors. She underwent primary PCI and a drug eluting stent deployed to proximal LAD. The left ventricular ejection fraction was 40% with no evidence of mitral regurgitation. 3 months later presented with heart failure NYHA III. The LVEF had declined to 25% and a functional grade 3-4 Mitral regurgitation and severe pulmonary hypertension despite optimal medical therapy. She had multiple hospitalization for heart failure and worsening renal function. NT-pro BNP was 14,589 pg/ml. She developed atrial fibrillation. She had a high STSPROM score and a moderate Euroscore 2 surgical risk for mitral valve replacement.

She was referred to mitral clip implantation Centre in the UK. A mitral clip implantation was performed via the right femoral vein through trans-esophageal guidance. She had a severe broad jet of mitral regurgitation centrally at A2/P2 due to both annular dilation and chordal restriction. Two NTR clips were deployed on the lateral and medial aspect. She had a mild residual mitral regurgitation and a mean gradient of 3mmHg across the valve.

Optimal medical therapy for heart failure was continued. The LVEF improved, pulmonary pressures and, hospitalizations reduced and functional class improved to NYHA I-II.

Conclusion

Mitral clip implantation was successful in reducing the MR and improving the patients functional class.

Submission ID: 43

A SNAP SHOT SURVEY TO ESTABLISH THE VASCULAR DISEASE BURDEN IN NAIROBI, KENYA

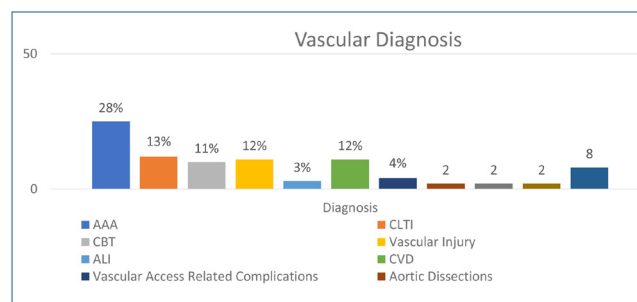
MOHAMMED NOOR, BRIAN RUHIU, OBED MORARA, MUSTAFA MUSAJEE

Background

Sub-Saharan Africa is facing a transition due to progressive urbanisation. There's an increase in cardiovascular disease and associated risk factors recently. Burden of vascular diseases in Kenya remains poorly defined. The aim of this preliminary study was to assess the volume and nature of vascular disease in Nairobi.

Methods

This was an observational study, conducted as a snapshot prospective audit across 3 centres in Nairobi, spanning both government and fee paying sectors. Data was prospectively collected over three months and included patient demographics, diagnosis at presentation, interventions if performed, reasons for no intervention if applicable, and funding of care.

**Results**

Ninety patients who presented with a vascular diagnosis to 3 health centres between January-June 2022. Fifty patients were female (55%) and 40 (45%) were male. Vascular diagnoses were infrarenal aortic aneurysm 25 patients (28%) chronic limb threatening ischaemia 12 patients (13%) carotid body tumour 10 patients (11%), traumatic vascular injury 11 patients (12%), acute limb ischemia 3 (3%), chronic venous disease 11 patients (12%), vascular access related complications 4 (4%), aortic dissections 2 patients, chronic iliofemoral DVT 2 patients, lymphoedema 2 patients, other vascular conditions 8 patients. Seventy patients (77%) were offered an intervention the remaining 23% were managed conservatively.

Conclusion

This preliminary data suggests a complex varied burden of vascular disease presenting to hospitals in Nairobi, 77% of patients benefitted from surgical intervention. Further work is needed to assess the pattern of disease in detail and understand the training and resources to provide comprehensive vascular surgery care in this region.

Submission ID: 44

SAVING THE LIMB & SAVING THE LIFE: OUR EXPERIENCE WITH TWO COMPLEX TRAUMA CASES AT PUBLIC HOSPITAL!

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Background

Trauma is becoming increasingly common in most part of the world and Kenya is no exception. Our hospital is the center of excellence which gets referral from all over Kenya.

We treat large amount of trauma cases. Recently we treated one patient with domestic violence who had right atrial tear from a knife entering from left supraclavicular area which was in fact unsuspected till operation.

The other patient had a history of industrial work trauma who came with traumatic injury to arm which was so badly damaged and despite possibility of above elbow amputation we managed to save limb by venous interposition of saphenous vein graft between brachial artery and radial artery. After nearly 18 months the graft is patent and the patient has near normal hand

These two cases with clinical presentation, diagnostic work up, team set up and surgical technique will be discussed.

Conclusion

Though difficult, High index of suspicion. timely intervention and attention to details is the key to success in trauma cases.

