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South African Heart Journal 2019: A year in review

Cardiovascular diseases (CVD) are the leading cause of mortality globally, accounting for an estimated 18 million deaths annually. In high income countries (HICs), 80% of cardiovascular deaths are due to myocardial infarctions and strokes. In South Africa, as in the rest of sub-Saharan Africa (SSA), the spectrum of CVD is different: largely due to hypertension, cardiomyopathy, rheumatic heart disease, pericardial disease and infections of the cardiovascular system.⁽¹⁾ Individuals at high risk of CVD may demonstrate raised blood pressure, glucose, and lipids as well as being overweight and having obesity; all of which can easily be detected in primary care facilities. Identifying those at highest risk of CVD and ensuring they receive appropriate treatment can prevent premature deaths. Access to essential noncommunicable disease medicines and basic health technologies in all primary healthcare facilities is essential to ensure that those in need receive treatment and counselling.

In the past few years, the burden of hypertension has shifted from HICs to low- and middle-income countries (LMICs), including sub-Saharan Africa. Elevated blood pressure is accompanied by rising obesity trends, with two thirds of South African women and a third of men being overweight or obese.⁽²⁾ In South Africa, the age-standardised death rates for non-communicable diseases (NCDs) are now higher than those of HIV/AIDS and tuberculosis combined, with CVD being the leading category of NCDs.⁽³⁾ Population-based strategies to prevent NCDs are progressive and include legislation for the reduction of sodium in processed foods, taxation of sugar-sweetened beverages and alcohol, and continued tightening of anti-tobacco regulations.

The South African Heart Journal, since its inception, has been one of the leading journals for cardiovascular disease on the African continent. It continues to play an important role in the promotion of science, education, advocacy in the cardiovascular space in South Africa and beyond. 2019 was no exception as the Journal published important articles, some of which are reviewed below.

HYPERTENSION

Capistrant and colleagues examined whether determinants of hypertension vary between Ghana and South Africa. They reported that South Africa had higher age-standardised prevalence of hypertension (men 76%, women 82%) compared to Ghana (men 57%, women 61%) and that odds of hypertension prevalence varied for rural residence and education and between the 2 countries. They observed consistent differences in awareness of hypertension between countries, which were related to educational attainment, income, and weight status by sex. However, determinants of control and management of hypertension differed between the 2 countries only for women.⁽⁴⁾

CORONARY ARTERY DISEASE

Russel and co-investigators evaluated the utility of admission blood glucose for predicting major adverse cardiac events (MACE) during hospitalisation and 6 months' post-discharge in acute myocardial infarction (AMI) patients. The highest prevalence of MACE was seen in the high admission glycaemia group, which was associated with cardiogenic shock, cardiac failure and death. Following multivariable logistic regression analyses of clinical and laboratory parameters associated with mortality, high admission blood glucose conferred a significantly increased odds of mortality. The optimal cut-off admission blood glucose value as determined via the receiver operating characteristic curve for predicting in-hospital and 6-months' mortality was 8.5mmol/l (area under the curve – AUC 0.63) and 8.1mmol/l (AUC 0.61) for MACE, respectively.⁽⁵⁾

CARDIOMYOPATHY AND HEART FAILURE

Isolated left ventricular non-compaction (ILVNC) is a rare, congenital, idiopathic cardiomyopathy that may present in adulthood. Lufundo and colleagues described clinical and echocardiographic features in four patients, each with a possible diagnosis of ILVNC, in the setting of potential alternative aetiologies for heart failure.⁽⁶⁾ This case series highlighted the importance of routine echocardiography in patients who present with heart failure, irrespective of associated risk factors. The authors cautioned against overdiagnosis of ILVNC with transthoracic echocardiography alone and recommended the use of cardiovascular magnetic resonance as a confirmatory test which yields additional information. They reminded us of the importance of screening of family members and strategies to prevent complications in confirmed cases of ILVNC.⁽⁶⁾

HIV-ASSOCIATED CARDIOVASCULAR DISEASE

Dellar, et al. investigated the levels of knowledge of South African surgical patients infected with HIV on the diagnosis and CVD. Correct responses for the items on the CVD knowledge questionnaire ranged between 0% and 61.5% for risk factors, and between 0% and 89.7% for signs/symptoms for CVD. They concluded that knowledge of CVD risk factors, signs and symptoms were less than desirable and that levels of CVD knowledge were likely a function of educational attainment.⁽⁷⁾

CARDIAC SURGERY

The systemic inflammatory response associated with cardiopulmonary bypass (CPB) is detrimental to organ function in varying degrees. Minimal extracorporeal circulation (MECC) assumes an attenuation of these deleterious effects. Swart, et al. compared the conventional CPB (CCPB) with MECC, in a

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population of patients who had their CABG done in a private practice in South Africa. They reported that MECC was associated with a better serum creatinine postoperatively, even though dialysis could not be avoided, and that MECC was associated with a shorter hospital stay. The second study (CCPB n=63 and MECC n=100) confirmed the shorter hospital stay.⁽⁸⁾

Weich and co-authors reported on the 7-year experience of transcatheter aortic valve implants (TAVI) in a private healthcare setting. Patients were high risk, with a mean STS score of 7.89 and mean logistic EuroSCORE of 26.5. There was a trend toward lower risk over time. Procedures were initially performed mainly via a transapical approach, but changed to mostly transfemoral with the introduction of smaller delivery systems. Procedural success rate was 91.8% for CoreValve and 88.5% for Edwards cases. Mean length of hospital stay following TAVI was 9 days initially, but declined to 4 days. One-year mortality was 19% and 1-year stroke rate was 10%.⁽⁹⁾

Severe mitral annular calcification (MAC) is not an uncommon occurrence in the elderly, and presence of MAC often precludes surgical replacement of the mitral valve. Initial attempts at percutaneous placement of transcatheter aortic valves in the calcified mitral annulus have not been very successful due to obstruction of the left ventricular outflow tract. Weich and colleagues describe a novel surgical approach where the anterior mitral valve leaflet was resected and a balloon expandable transcatheter aortic valve then successfully deployed within the calcified annulus.⁽¹⁰⁾

Van der Merwe and colleagues reported on the current status and future perspectives of minimally invasive atrioventricular valve surgery.⁽¹¹⁾ Minimally invasive atrioventricular valve surgery (MIAS) is associated with significant learning curves and its routine application is met with varying degrees of enthusiasm in view of strict quality control, clinical governance and outcome reporting. Whether the reported potential benefits and comparable efficacy across a range of long-term outcome measures reported by experienced MIAS centres can be translated into general international surgical practice is not clear.

CONGENITAL HEART DISEASE

Bosman, et al. reported on the safety and efficacy of percutaneous closure of perimembranous ventricular septal defects in children. Mean follow-up was 2 years 3 months. Successful device delivery was achieved in 97.6%. 71% had complete closure of their defect and 26% had a residual but haemodynamically insignificant defect. Significant early complications included moderate tricuspid regurgitation and device embolisation in few patients. No cases of heart block were recorded.⁽¹²⁾

Lebea and co-authors reported on a single-centre experience with pulmonary valve stenosis (PVS) in South Africa and found cases of congenital PVS from between January 1990 and January 2016, accounting for 0.0007% of all congenital heart defects during the study period. Age at diagnosis ranged from 22 months - 13 years. Most patients presented with respiratory symptoms, and some with recurrent haemoptysis. All cases were right-sided unilateral PVS and all were associated with one or more congenital heart defects.⁽¹³⁾

Neurodevelopmental evaluation and referral of children with congenital heart disease is an important aspect of practice in paediatric cardiology. Smith, et al. report poor awareness of management guidelines amongst practitioners, and that 55% of children with developmental delay were referred for developmental evaluation and 75% to intervention therapies.⁽¹⁴⁾

PREVENTATIVE CARDIOLOGY

Evans and colleagues reported on a 12-week community-based physical activity and mindfulness intervention focusing on health outcomes and markers of autonomic nervous system function and found that regular physical activity, controlled breathing and stress reduction alter heart rate variability – specifically in the low frequency spectrum that is associated with baroreflex function.⁽¹⁵⁾ Implications of these changes, in terms of health outcomes, along with efforts at addressing scalability and sustainability of community-based health promotion interventions may be important targets for future study.

In this issue of the Journal (and the next), we explore a collaboration with the European Society of Cardiology on key publications in 2019 in the European Heart Journal. A review and summary of key publications related to preventative cardiology,⁽¹⁶⁾ heart failure,⁽¹⁷⁾ imaging,⁽¹⁸⁾ and valvular heart disease⁽¹⁹⁾ are included in this issue. More summaries will be included in the next issue.

Enjoy reading.

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