

# Heart Failure in Zambia: Evidence for Improving Clinical Practice.

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Heart failure (HF) is a common condition in Zambian hospitals, causing substantial morbidity and mortality. There has been a reported greater propensity for heart failure in blacks which may be related to a genetic predisposition to cardiomyopathy, higher prevalence of risk factors such as hypertension and exposure to toxins such as alcohol<sup>1</sup>. Much less is known of heart failure in Zambians and it is therefore gratifying to note the paper by P.Chansa et al<sup>2</sup> documenting factors that relate to mortality in this group of patients at the University Teaching Hospital in Lusaka. Indeed an understanding of the etiological factors and subsequent pathophysiological manifestations have a bearing on the rational approaches to diagnosis and management, and an appreciation of the factors that influence mortality, will definitely enhance evidence based clinical practice and improve health outcomes.

## **The definition of heart failure**

Heart failure broadly refers to a clinical syndrome resulting from an inadequate cardiac output or from a state where the cardiac output is sustained by an increased filling pressure. This manifests in signs and symptoms of low cardiac output, pulmonary congestion and systemic venous congestion. It is therefore a vague and imprecise descriptive term rather than a definitive diagnosis. In its milieu of manifestations, good clinical outcomes are dependent on more accurate diagnosis and precise therapeutic interventions aimed at not only reducing mortality, but also on improving quality of life.

## **Patho-aetiology of Heart Failure**

This study indicates a young population of sufferers of HF in Zambia, confirming the observation made elsewhere about HF in the black population<sup>1</sup>. There is urgency to

clearly elucidate the pathoeaetiology to mitigate this state of affairs. Indeed this study population had a good amount of individuals with valvular heart disease, rheumatic heart disease (RHD) being a significant contributor, and hypertension. It is time to increase RHD and Hypertension prevention interventions.

The related finding was that of dilated cardiomyopathy, whose aetiology is not known but assumed to be infective. However, HIV infection was not found to be a significant confounder in this case. However, this needs further detailing. The HIV cardiomyopathy, a dilated, low output cardiomyopathy was described in as early as 1986 by Cohen and colleagues<sup>3</sup> and reported to be a result of a viral myocarditis. Indeed the prevalence of HIV in this study population was higher (23%) than that found in the general population (14.1%). The significance of this finding begs for answers especially that it is reported that clinical heart muscle disease and heart failure in AIDS is unusual<sup>4</sup>. The contribution of anti-retroviral therapy and other drugs including alcohol to the causation of heart failure was not specifically explored in this study. Neither were vitamin and selenium deficiencies nor cachexia investigated as aetiological factors for the cardiomyopathies.

## **Echocardiography in clinical practice**

This study also underlines the importance of echocardiography in the description and comprehensive management of HF and negates the reflex prescription of inotropic agents for all types of HF. There were about as many HF patients with preserved ejection fraction (HFpEF) as there were those HF patients with reduced EF (HFrfEF). This index alone desegregated the subjects etiologically; those with HFpEF having had HHD, cor-

pulmonale or valvular heart disease (VHD) while a majority with HFrEF had dilated cardiomyopathy. The approach to management of these conditions is very varied and crucial for better clinical outcomes. HFpEF is mostly a result of diastolic failure manifesting as abnormal left ventricular relaxation and increased left ventricular chamber stiffness while HFrEF is mostly a result of systolic dysfunction. Indeed, an echocardiograph ought to be a common diagnostic tool at the hands of the clinicians to aid evidence based approaches to management. Without it, management is likely to be a result of “informed guess work” with relatively poor outcomes.

### **Electrocardiography in clinical practice**

Arrhythmias and conduction defects are quite common in HF, the most common being Atrial Fibrillation (AF) which has serious consequences. In the study, 8% of patients had AF and few other arrhythmias are described. The limitations outlined by the authors are appreciated. Indeed, the lack of electrocardiographic ambulatory (holter) monitoring facilities at the UTH makes diagnosis of paroxysmal AF/arrhythmia difficult meaning that the reported figure is most likely an underestimate. Arrhythmias predispose to thromboembolic events and may require anticoagulation in addition to the other therapies. This demonstrates the need for electrocardiography to be a routine, readily available and easily accessible diagnostic tool as well in the management of HF.

### **Anaemia and iron deficiency in HF**

The role of anaemia in morbidity and mortality of patients with HF has again been highlighted in this paper. It has been shown that anemia is an independent prognostic determinant for mortality. Indeed it has been said that low level of ferritin, rather than gross anaemia, is the better prognostic indicator<sup>5</sup>. Iron deficiency is said to develop in HF patients due to depletion of iron stores, iron malabsorption and reduced availability of iron recycled in the reticuloendothelial system<sup>6,7</sup>. Indeed, correction of iron deficiency with the use of intravenous iron in patients with chronic heart failure has had clinical benefits<sup>8</sup>. This is another wake up call to diligence in evaluating HF

patients for holistic care and management. Quality care would demand for measurement of serum ferritin in all patients of HF although Hb would be a proxy.

### **The kidney in Heart Failure**

The ongoing physiological interactions between the cardiovascular and renal systems are well demonstrated in HF. While the initial intentions for these interactions is for homeostasis, the inability to sustain this constancy in the 'internal milieu' is indicative of the severity of the underlying pathology. There is evidently activation of the Renin-Angiotensin-Aldosterone system while stimulating the renal sympathetic neural systems that negatively impact on the physiological mechanisms responsible for optimal cardiac output and electrolyte balance. The study reported that a high serum urea and high creatinine were prognostic indicators for poor outcome. Several electrolyte derangements are reported in HF, again highlighting the importance of clinical chemistry investigations for optimal management of HF.

### **Mortality from Heart failure at the UTH**

A mortality of 35% reported in the paper is among the highest in the world. It calls for a serious and urgent evaluation of all clinical care delivery systems to achieve optimal results. Indeed the findings of this study provide a good platform from which to launch remedial measures supported by evidence. There is definitely evidence for sub-optimal evaluation of patients with HF and lack of guidelines for management of HF. There was very low utilization of  $\beta$ -blockers, diuretics and angiotensin-converting-enzyme inhibitors in certain groups of patients who may have benefited from these therapies. However, the decisions for specific cost-effective therapeutic interventions depend on diagnostic accuracy and evidence from the prognostic indicators.

### **Conclusion**

There is indeed an epidemic of HF in the midst of the Non-communicable diseases (NCD) epidemic necessitating timely responses to mitigate against mortality. The evidence presented unmask much that was not known of HF at the UTH and surely provides evidence for alteration of clinical practice for better

health outcomes. It is time to move towards formulating practice guidelines and protocols to regulate management of HF while facilitating provision of basic diagnostic tools in the health facilities to improve clinical outcomes.

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