The contemporary study of acute myocarditis in South Africa – CAMISA

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Introduction: The aetiology and estimated incidence of acute myocarditis (AM) remains undefined in Africa. Whilst cardiac magnetic resonance (CMR) provides for a provisional non-invasive diagnosis, endomyocardial biopsy (EMB), which is infrequently clinically sought, remains the gold standard. The developed world has experienced a shift in the viral epidemiology of AM and the ESC's most recent position statement on myocarditis recommends both CMR and EMB as the standard of care in suspected cases. We report on the interim results of the study.

Purpose: To determine the nature of presentation, underlying aetiology, and outcomes of patients presenting with AM to a single tertiary centre in South Africa.

Methods: A cohort of patients from a single tertiary centre in South Africa will be recruited from January 2018 to December 2022. All patients presenting or referred to the centre with clinically suspected AM that are investigated according to the ESC recommendations on myocarditis, which includes blood tests (CRP, hsTNT, HIV and Hepatitis C serology, ANA), a standard twelve-lead ECG, TTE, coronary angiography, CMR and EMB, will be included. Enrolment is ongoing.

Results: A total of 102 (mean age 42.2±13 years, 64.7% male) cases of clinically suspected AM were identified between January 2018 and January 2021. AM was confirmed in 41 (40.2%) cases on CMR only, while 41 (40.2%) were also confirmed on EMB. 4 cases of sarcoidosis, 1 case each of eosinophilic myocarditis, amyloidosis and primary cardiac lymphoma were diagnosed. Viral genome was isolated by PCR in 60 (59.8%) patients. PVB19 (73.5%) was the most commonly identified virus in those with confirmed AM followed by EBV (12.2%), HHV6 (4.1%) and Human Bocavirus (2%). 3 were coinfected with PVB19/EBV, and 1 with PVB19/EBV/HHV6. PVB19 was also isolated in 9 patients with no evidence of AM on CMR or EMB, but with lower median viral load compared to those with AM (198copies/ml IQR 113 – 282 vs 483copies/ml IQR 366 – 1460, p=0.005). The virus-positive patients with confirmed AM tended to be older (43.1±13.4 years vs 37.6±12.2 years, p=n/s), had higher median CRP (24mg/L vs 16mg/L, p=n/s) but lower median hsTnT (326.5ng/L vs 434.5ng/L, p=n/s) at presentation, and were more likely to be EMB positive (60% vs 37.5%, p=0.04) when compared to the virus-negative group. To date 6 patients have demised, of which 4 were related to AM.

Conclusion: To our knowledge, this is the first study to evaluate AM in Africa, and the biggest cohort of AM patients outside of the developed world. It demonstrates the heterogeneity in presentations and provides insight into the viral pathogens within our local setting, which appears similar to those reported in the developed world. We were also able to highlight some differences in demographic and clinical characteristics between those with virus-positive and virus-negative AM. The background prevalence and causal role of PVB19 in our setting will also need to be further explored.