

WORLD CONGRESS ON RHEUMATIC HEART DISEASE

2-4 November 2023 • Abu Dhabi



Submission Id: 79

Title: HIGH RATES OF MORTALITY IN UGANDA FOLLOWING ACUTE RHEUMATIC FEVER: A COMMUNITY-BASED PROSPECTIVE COHORT STUDY

Authors: Scott Wirth, Jafesi Pulle, JangDong SEO, Doreen Nakagaayi, Craig Sable, Asha Bowen, Tom Parks, Jonathan Carapetis, Emmy Okello, Andrea Beaton, Emma Ndagire, Emma Ndagire

Background & Aims: Rheumatic heart disease is the largest contributor to cardiovascular morbidity and mortality in children worldwide. Recently the World Health Organization recognized its burden could be mitigated through better understanding of its antecedent disease, acute rheumatic fever. However, there is a paucity of data on acute rheumatic fever from sub-Saharan Africa. Contemporary data on outcomes from this region do not exist. We aimed to describe medium-term mortality, disease recurrence, and change in carditis among Ugandan children following ARF diagnosis, and to identify correlates of mortality.

Methods: We conducted a natural history study of Ugandan children diagnosed with acute rheumatic fever from 2017-2020. These children were diagnosed during a community-based incidence study that utilized active case-finding strategies to identify, refer, and screen potential patients. Patients diagnosed with acute rheumatic fever were enrolled in the Uganda National Rheumatic Heart Disease registry and were followed by the Uganda Heart Institute under yearly review, including most recently in August 2022. From this cohort, those with at least one year of longitudinal follow-up were eligible for inclusion. We utilized a Kaplan-Meier (KM) survival analysis to describe mortality and calculated incidence of mortality and ARF recurrence over the follow-up period. Separate Cox proportional hazards regression models were used to identify correlates of mortality. Baseline and follow-up echocardiograms were reviewed and degree of mitral regurgitation, mitral stenosis, and aortic regurgitation as well as overall carditis status were compared using descriptive statistics.

Results: Of the 180 patients originally diagnosed with definite ARF, 135 had longitudinal follow-up of at least one year and were included in the primary analysis. Males comprised 46% of this group and the median (interquartile range [IQR]) age at ARF diagnosis was 9.0 (4.0, 13.0) years. The total observation time among all participants was 503 person-years and the median (IQR) follow-up time was 4.3 (3.4, 5.1) years. Among the 135 children included in the primary analysis, 22/135 (16.3%) experienced death, 19/135 (14.1%) cardiac death, 5/135 (3.7%) ARF recurrence, and 5/135 (3.7%) surgery. Incidence of mortality per 100, 000 person-years was 4367 (95% CI 2737, 6612), cardiac mortality 3772 (2271, 5890), and ARF recurrence 993 (322, 2316). KM analysis saw 14/22 (63.6%) of deaths occur by one year, 16/22 (72.7%) by two years, and 20/22 (90.9%) by three years. The presence of moderate/severe carditis (HR 14.1, 95% CI 4.2, 47.7) and prolonged PR interval (HR 3.9, 95% CI 1.5, 9.9) at diagnosis were associated with increased cardiac mortality. Of the total cohort, 107 survivors were included in a sub-analysis of echocardiographic outcomes. Among them, 27/107 (25.2%) had improvement in carditis, 70/107 (65.4%) no change, and 10/107 (9.4%) progression. Fewer than half of survivors had complete secondary antibiotic prophylaxis records available for review in hard copy format, and no significant associations were found between adherence rate and mortality or ARF recurrence.

Conclusions: These are the first contemporary data from sub-Saharan Africa reviewing midterm outcomes following ARF. Our adverse outcome rates exceed those reported elsewhere. Most decedents already had advanced cardiac involvement upon first ARF diagnosis, as evidenced by PR prolongation and moderate/severe carditis, both markers of severe disease. This suggests that their first diagnosis was actually the latest of multiple undiagnosed recurrences that had already compounded into RHD. These data indicate that a high burden of ARF exists in the community, going undetected by current methods. They underscore the need for better screening practices, including point-of-care diagnostics, to improve early ARF detection.