Submission Id: 231

Title: PREVALENCE AND PREDICTORS OF OUTCOME IN PATIENTS WITH PREDOMINANT RHEUMATIC MITRAL STENOSIS IN EASTERN NEPAL

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Background & Aims: Rheumatic heart disease (RHD) is one of the leading causes of cardiovascular morbidity and mortality in low and middle-income countries. RHD and its associated complications are commonly encountered and followed up in cardiology clinics across the country but data on the prevalence of predominant mitral stenosis (MS) and factors associated with long-term adverse outcomes are lacking. Various clinical and echocardiography parameters have been shown to influence the long-term outcome This study aims to find out the prevalence and predictors of long-term adverse outcomes in patients with predominant MS from tertiary care hospitals in the eastern part of Nepal.

Methods: This is a hospital-based prospective observational study. A total of 850 participants of RHD were screened by trans-thoracic echocardiography (TTE) in the outpatient department of the Cardiology unit by a convenient sampling method from January 2020 to December 2022. Among them, 686 cases of predominant moderate to severe cases of MS were enrolled. We included only patients with predominant rheumatic MS without significant mitral regurgitation and aortic valve disease. Demographic data of participants included age, gender, co-morbid illnesses, body mass index, waist-hip ratio, heart rate (HR), and mean blood pressure (MBP). Laboratory parameters included serum hemoglobin and estimated glomerular filtration rate (eGFR). Patients were classified as in AF or sinus rhythm (SR) based on baseline 12- lead electrocardiogram. The pre-specified outcomes were assessed with follow-up at one month in the beginning and then every six months for a median period of 720 days.

Results: Out of 850 participants, 696 (81.88%) patients with predominant MS were enrolled including 203 (29.2 %) males and 493 (70.8 %) females, with a mean age of 45.19 ± 14.73years. It was common in the age groups between 40 and 60 years. Two hundred and ninety-nine (43 %) patients had Atrial fibrillation (AF), 46 (6.6%) patients had thrombus in left atrium (LA). Higher mortality was noted in patients with lower eGFR (P=0.02), smaller MV orifice (P= 0.04), presence of AF (P= 0.001), LA clot (P=0.01) and pulmonary hypertension (PASP ≥ 60mmHg) (P= 0.001). Factors associated with mortality in univariate analysis were older; age more than 40 years; HR 0.31 (95%CI:0.12-0.76), low eGFR; HR 0.53 (95% CI: 0.28-0.99, P=0.04), dilated LA (≥45 mm; HR 3.30 (95% CI 1.17-9.28, P=0.02), presence of LA clot; HR 3.08 (95% CI: 1.72-5.50, P= 0.001), warfarin use; HR 0.32 (95% CI: 0.13-0.78, P=0.01), and presence of AF; HR 2.9 (95% CI: 1.54 -5.75, P=0.001), pulmonary hypertension (>60mmHg); HR 2.81 (95% CI1.24 -6.36, P=0.01) and history of hospitalization; HR 4.86 (95% CI: 3.36 -7.04, P=0.001). Incidence of long-term outcome during follow up was as follows: hospitalization due to any cause in 156 (22.4%) patients, new-onset AF in 152 (21.83%), mitral valvotomy or surgeries in 116 (16.66%), mortality in 41 (5.9%), bleeding in 36 (5.17%) and stroke in 26 (4%). The median survival was 1026.04 days (95% CI: 1009.72-1042.36) with higher survival in patients with SR 1049.38 days.

Conclusions: There were significant gender-based differences in the prevalence of MS with female predominance. Median survival was higher in patients with sinus rhythm compared to patients with AF. Factors associated with mortality were old age, higher NYHA class at presentation, low eGFR, dilated LA, presence of LA clot, warfarin use, pulmonary hypertension, and history of prior hospitalization.