

WORLD CONGRESS ON RHEUMATIC HEART DISEASE

2-4 November 2023 • Abu Dhabi



Submission Id: 187

Title: Rhythm in Rheumatic Heart Disease Patients: Anticoagulation Strategy and 30 days and 6 months Outcomes

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Background & Aims: Valvular heart disease (VHD) is common worldwide although the etiology varies by region. In higher-income countries, the most common cause of VHD is degenerative, whereas, in developing regions, rheumatic heart disease (RHD) is the main cause. VHD, independent of the underlying cardiac rhythm, is associated with a higher risk of thromboembolic events. Atrial fibrillation (AF) is associated with a substantially higher risk of thromboembolism in patients with rheumatic mitral stenosis (MS). Hence, we conducted this study to evaluate AF in patients with RHD along with the assessment of management strategy and short-term outcomes (30 days and 6 months).

Methods: A consecutive sample of 522 diagnosed patients of RHD were included in this descriptive observational study. Rhythm was assessed on 12-lead ECG as sinus rhythm or atrial fibrillation. Clinical characteristics and echocardiographic findings for these patients were recorded. Patients were followed-up after 30 days and 6 months and the incidence of thromboembolic events and mortality were recorded. Clinical characteristics and outcomes were compared for patients with AF and sinus rhythm.

Results: A total of 522 patients with RHD were included out of which 55.6% (290) were female and mean age was 44.7 ± 14.9 years. AF was observed in 37.2% (194) of the patients. Prior percutaneous transvenous mitral commissurotomy (PTMC) was observed in 8.8% vs. 3.0%; $p=0.004$ and surgical mitral commissurotomy in 2.1% vs. 0.6%; $p=0.133$ of the patients with AF and sinus rhythm, respectively. Severe MS was observed in 71.6% vs. 50.6%; $p<0.001$ and severe TR in 25.3% vs. 12.8%; $p=0.001$ of the patients with AF and sinus rhythm, respectively. The anticoagulation strategy was warfarin in 73.7% vs. 51.5%; $p<0.001$ and NOAC in 5.2% vs. 1.8%; $p=0.033$ of the patients with AF and sinus rhythm, respectively. During the observation period; percutaneous intervention was performed in 17.5% vs. 7.3%; $p<0.001$ and surgery in 5.2% vs. 1.8%; $p=0.033$ of the patients with AF and sinus rhythm, respectively. During 30-day follow-up; re-hospitalization rate was 27.2% vs. 9.3%; $p<0.001$ and stroke rate was 3.8% vs. 5.9%; $p=0.301$ for patients with AF and sinus rhythm, respectively. At 6 months follow-up, re-hospitalization rate was 23.7% vs. 6.7%; $p<0.001$, stroke rate was 1.8% vs. 2.8%; $p=0.483$, bleeding rate was 6.5% vs. 6.4%; $p=0.950$, and all-cause mortality rate was 2.4% vs. 0.4%; $p=0.048$ for patients with AF and sinus rhythm, respectively. Good adherence to the medication was observed to be 91.1% vs. 97.5% after 6 months for patients with AF and sinus rhythm, respectively.

Conclusions: AF was observed in more than 1/3rd of the patients with RHD. AF was associated with severe MS and required percutaneous and surgical intervention. It was found to be associated with an increased risk of re-hospitalization as well as an increased risk of all-cause mortality in these patients. Early detection and appropriate treatment of RHD can decrease the incidence of AF in these patients.