

## Mitral valve prolapse: impact of mitral valve disjunction in a large single-center

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**Introduction:** Despite being known for more than a century, mitral valve prolapse (MVP) is an entity not fully understood with controversial data regarding the prognosis.

**Aim:** To characterize a sample of patients with MVP and to assess the frequency of complications associated with MVP (arrhythmias, hospital admissions and death).

**Methods:** Single-center retrospective study of consecutive patients with MVP documented in transthoracic echocardiogram between January 2014 and October 2019. MVP was defined as systolic displacement of the mitral leaflet into the left atrium  $\geq 2$  mm from the mitral annular

plane. Demographic, clinical, echo, EKG data were collected as well as major adverse events at follow-up. Categorical variables were reported in absolute number and/or % and continuous variables were reported as mean and SD or median and IQR. The results were obtained using Chi-square and ANOVA tests.

**Results:** 247 patients were included (mean age  $62.9 \pm 18$  years, 61% male). The mean distance of the MVP was 6mm (IQR 5-9). The posterior mitral valve leaflet (PL) was the most frequently involved (49%), followed by involvement of both leaflets (BL) (27%) and the anterior leaflet (AL) (25%). Patients with MVP of PL were older compared to patients with BL and AL involvement ( $68 \pm 15$  vs  $58 \pm 17$  vs  $59 \pm 22$  years, respectively,  $p < 0.001$ ) and had longer QT interval ( $419 \pm 35$  vs  $403 \pm 25$  vs  $410 \pm 34$ ms, respectively,  $p = 0.013$ ). 70.4% (174) had significant MR. Mitral annulus disjunction (MAD) was present in 9.3% ( $n = 23$ ). The mean LVEF was  $63\% \pm 6.3\%$  and LV mass was  $124.7 \pm 41$ g/m<sup>2</sup>. Most of the patients were in sinus rhythm (SR) (78%). 13.3% had hospital admission for cardiovascular cause and 8.5% ( $n = 21$ ) died.

During a mean follow-up of  $30 \pm 19$  months, 25.1% of the patients had de novo atrial fibrillation (AF), 8 patients (3%) were submitted to supraventricular dysrhythmia ablation. 16.2% had premature ectopic ventricular complexes, 2.4% non-sustained VT, 0.4% sustained VT, 0.8% needed ICD, 8.5% had a pacemaker. 25% of the patients underwent mitral valve intervention (23.9% to surgical intervention and 3 to percutaneous). 12% of the patients had a hospital admission for CV cause and 8.5% of the patients died.

In multivariate analysis, hospitalization for CV cause (OR 7.27,  $p = 0.011$ , CI 95% 1.59- 33.3), higher NYHA class (III-IV) ( $p = 0.036$  OR 5.7 CI95% 1.125-28.84) and the presence of LBBB ( $p = 0.021$  OR = 6.78 CI95% 1.13-28.85) were independent predictors of mortality.

MAD was not associated with the outcomes. SR (OR 0.3,  $p = 0.014$ , CI95% 0.119-0.786) and prolapse (OR 0.37,  $p = 0.035$ , CI95% 0.148-0.935) according to the ESC classification (comparing to flail and billowing) predicted survival.

**Conclusion:** MVP was traditionally described as a benign entity. However, in our population it was associated with significant mitral regurgitation, some requiring intervention. Besides that, 44% had arrhythmias, with AF occurring in about 25%, hospitalization in 13.3% and cardiovascular death in 8.5%.