Mitral annular calcification (MAC) is associated with several cardiovascular disorders including coronary artery disease (CAD), atherosclerosis, heart failure, and stroke. MAC and atherosclerosis share similar clinical risk factors for cardiovascular diseases, including age, obesity, hypertension, hyperlipidemia, and diabetes mellitus. The aim of this study was to assess the mean platelet volume (MPV), an indicator of platelet activation in patients with MAC. The study group consisted of 101 patients with MAC. An age, sex, and BMI matched control group was composed of 55 patients who were admitted to the echocardiography laboratory due to suspicion of organic heart disease and eventually found to be free of MAC. We measured platelet indices values in patients and controls. MPV was significantly higher in patients with MAC than in controls (8.9±0.8 versus 8.0±0.9 fl, respectively; P<0.001) and platelet distribution width (PDW) was significantly higher in patients with MAC than in controls (15.8±1.3 versus 15.0±1.3%, respectively; P<0.001). MPV was positively correlated with MAC (P<0.001, r=0.47), atrial fibrillation (P=0.01, r=0.19), left atrial (P=0.02, r=0.83) and negatively correlated with platelet count (P=0.01, r=-0.20). MPV [odds ratio (OR) 3.89; 95% confidence interval (CI) 1.97-7.67; P<0.0001], and PDW (OR 2.27; 95% CI 1.45-3.55; P<0.0001) were independently associated with the MAC. We have shown that MPV and PDW were significantly elevated in patients with MAC. MPV was correlated with MAC, atrial fibrillation and left atrial and negatively correlated with platelet count. MPV and PDW were independently associated with MAC.