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Prognostic value of stress echocardiography in preoperative risk stratification and management

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Introduction: The prognostic value of pharmacologic stress echocardiography has been extensively demonstrated in patients undergoing noncardiac surgery since 42% of the perioperative complications are cardiac. Coronary artery stenoses can become flow-limiting due to hemodynamic fluctuations in this period leading to myocardial ischemia.

Purpose: Evaluation of prognostic value of pharmacologic stress echocardiography in preoperative risk stratification.

Methods: Single center retrospective analysis of patients' data referred to perform a preoperative risk stratification through pharmacological stress echocardiography between January 2014- December 2018. Data was collected regarding clinical and echocardiographic parameters to predict perioperative cardiac complications (myocardial infarction and development of arrhythmias) and evaluate the impact of the result of DSE in patients' clinical management.

Results: Of 910 pharmacological stress echocardiograms, 106 were performed to evaluate preoperative risk. Patients' mean age was 66 ± 11 years, 85% males. 64% had hypertension, 45% dyslipidaemia, 38% current smokers and 18% diabetes. 189% had previously myocardial infarction and 9% stroke. All patients were proposed to intermediate-high risk surgeries: 73% to vascular surgery, 14% to kidney transplant and 13% to other type of surgery (especially abdominal surgery). Most of the stress tests (64%) were performed with dobutamine and the others 34% with dipyridamole. 91% of stress echocardiography were negative, 6% positive and 4% inconclusive. The patients with a positive stress test was submitted to coronary angiography to treat relevant lesions and cardiovascular risk factors were optimized. 72% of the patients has already been submitted to the proposed surgery; in this population, there was a 5% rate of cardiac complications following the surgery, all in patients with previous negative stress echocardiography. Complications were non-ST elevation myocardial infarction in 1% and de novo atrial fibrillation in 4%. Half of the patients with a positive stress echocardiography were operated with no cardiac perioperative complications, possibly related to patient's optimization before the surgery; in the other half it was decided not to perform the surgery due to the potential cardiac risk. Predictor factors for perioperative cardiac complications, evaluated through univariate and multivariate analysis, were age (odds ratios (OR) 1.232, confidence interval (CI) 1.043-1.456, p 0.007) and stroke (OR 0.057, CI 0.947-44.592, p 0.033).

Conclusion: In our study, patients with a positive stress echocardiography were optimized before the surgery leading to none cardiac perioperative complications, emphasizing the importance of this test in preoperative patients' management.