

Early Risk Stratification with Dipyridamole Stress Echo in a Patient with Intermediate Lesion in the Right Coronary Artery, 24 Hours after Percutaneous Coronary Intervention

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INTRODUCTION

The natural history of single vessel coronary disease is generally benign except for single vessel occlusion in acute coronary syndrome (ACS). Several techniques, including pharmacological stress echocardiography, have been proposed for risk stratification. This is particularly effective in patients with single-vessel disease with intermediate stenotic lesions (50–60%), based on the echocardiography appearance of wall motion abnormalities, especially following post percutaneous coronary intervention (PCI). Stress echocardiography is a valuable diagnostic tool when intravascular ultrasound (IVUS) and fractional flow reserve (FFR) are not readily available.

CASE REPORT

We report a case of a 59-year old male patient with stage II hypertension, diabetes mellitus and dyslipidaemia, referred to cardiology clinic with stable angina class CCS II/IV, with echocardiography showing good ejection fraction of 62% and no regional wall abnormalities. A coronary angiogram showed significant right coronary artery disease, with a 60–70% stenosis in the middle segment and a 95% distal lesion. The left coronary artery showed no significant disease. The patient underwent PCI with stenting using a drug eluting stent of the distal lesion, with no intervention on the proximal lesion. Intravascular ultrasound or FFR equipment were not available, therefore, it was decided to perform dipyridamole stress echo at 24 hours post-angioplasty to assist in the decision on further intervention of the proximal lesion. This showed negative findings for inducible myocardial ischaemia in the inferior wall. The patient was, therefore, discharged home on medical treatment. A follow-up stress echo two months later confirmed the early post-intervention findings.

Keywords: Angioplasty, dipyridamole, echocardiography, stress

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DISCUSSION

Presently, there is no evidence that coronary revascularization is effective in reducing mortality or subsequent myocardial infarction in patients with single-vessel coronary artery disease (1–2) and yet it is common practice to perform PCI on the basis of only coronary anatomical findings, without noninvasive ischaemic stratification pre-procedure. This is not so for ACS with single coronary artery occlusion in which early revascularization reduces mortality (3). Pharmacological stress echocardiography has been tested in different groups of patients, ranging from those with chronic coronary artery disease (4–7), after acute myocardial infarction (8–11), before major vascular surgery (7, 12, 13) and after coronary angioplasty (13).

In the presence of an intermediary coronary artery lesion and in the absence of invasive ischaemia assessment as FFR or IVUS, the use of pharmacological stress echocardiography, utilizing dipyridamole, is a valuable tool with a high sensitivity and specificity. It is easy to implement, reproducible, safe and low cost.

In conclusion, dipyridamole stress echocardiography for risk stratification in patients with intermediate lesion is a low cost, non-invasive, highly sensitive tool to be used in centres that do not have FFR and IVUS for assessment of ischaemia and clinical patient management.

REFERENCES

1. Kent KM, Rosing DR, Ewels CJ, Lipson L, Bonow R, Epstein SE. Prognosis of asymptomatic or mildly symptomatic patients with coronary artery disease. *Am J Cardiol* 1982; **42**: 1823–31.
2. Gohlke H, Samek L, Betz P, Roskamm H. Exercise testing provides additional prognostic information in angiographically defined subgroups of patients with coronary artery disease. *Circulation* 1983; **68**: 979–85.
3. O’Gara PT, Kushner F, Ascheim D, Casey D, Chung M, de Lemos J et al. 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2013; **61**: e78–140.
4. Picano E, Severi S, Michelassi C, Lattanzi F, Masini M, Orsini E et al. Prognostic importance of dipyridamole-echocardiography test in coronary artery disease. *Circulation* 1989; **80**: 450–7.
5. Severi S, Picano E, Michelassi C, Lattanzi F, Landi P, Distante A et al. Diagnostic and prognostic value of dipyridamole echocardiography in patients with suspected coronary artery disease. Comparison with exercise electrocardiography. *Circulation* 1994; **89**: 1160–73.

6. Mazeika PK, Nadazdin A, Oakley C. Prognostic value of dobutamine echocardiography in patients with high pretest likelihood of coronary artery disease. *Am J Cardiol* 1993; **71**: 33–9.
7. Poldermans D, Rambaldi R, Fioretti PM, Boersma E, Thomson IR, van Sambeek M et al. Dobutamine-atropine stress echocardiography and clinical data for predicting late cardiac events in patients with suspected coronary artery disease. *Am J Med* 1994; **97**: 119–25.
8. Bolognese L, Sarasso G, Piccinino C, Rossi L, Bongo A, Rossi P. Silent versus symptomatic dipyridamole-induced ischemia after myocardial infarction: clinical and prognostic significance. *J Am Coll Cardiol* 1992; **19**: 953–9.
9. Sicari R, Picano E, Landi P, Pingitore A, Bigi R, Coletta C et al. Prognostic value of dobutamine-atropine stress echocardiography early after acute myocardial infarction. Dobutamine International Cooperative Study. *J Am Coll Cardiol* 1997; **29**: 254–60.
10. Tischler MD, Lee TH, Hirsch AT, Lord CP, Goldman L, Creager MA et al. Prediction of major events after peripheral vascular surgery using dipyridamole echocardiography. *Am J Cardiol* 1991; **68**: 593–7.
11. Poldermans D, Fioretti PM, Forster T, Thomson IR, Boersma E, el-Said EM et al. Dobutamine stress echocardiography for assessment of perioperative cardiac risk in patients undergoing major vascular surgery. *Circulation* 1993; **87**: 1506–12.
12. Picano E, Pirelli S, Marzilli M, Faletta F, Lattanzi F, Campolo L et al. Usefulness of high dose dipyridamole echocardiography test in coronary angioplasty. *Circulation* 1989; **80**: 807–15.
13. Harris PJ, Lee KL, Harrell FE, Behar VS, Rosati RA. Outcome in medically treated coronary artery disease. Ischemic events: nonfatal infarction and death. *Circulation* 1980; **62**: 718–26.