

Original article

Multivessel Versus Culprit-only Percutaneous Coronary Intervention in ST-segment Elevation Acute Myocardial Infarction: Analysis of an 8-year Registry

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ABSTRACT

Introduction and objectives: The optimal treatment of patients with multivessel coronary artery disease and ST-segment elevation acute myocardial infarction (STEMI) who undergo primary percutaneous coronary intervention (PCI) is controversial. The aim of this study was to access the prognostic impact of multivessel PCI vs culprit vessel-only PCI in real-world patients with STEMI and multivessel disease.

Methods: This was a retrospective cohort study of 1499 patients with STEMI diagnosis who underwent primary PCI between January 2008 and December 2015. About 40.8% (n = 611) patients had multivessel disease. We performed a propensity score matched analysis to obtain 2 groups of 215 patients paired according to whether or not they had undergone multivessel PCI or culprit vessel-only PCI.

Results: During follow-up (median, 2.36 years), after propensity score matching, patients who underwent multivessel PCI had lower rates of mortality (5.1% vs 11.6%; Peto-Peto P = .014), unplanned repeat revascularization (7.0% vs 12.6%; Peto-Peto P = .043) and major acute cardiovascular events (22.0% vs 30.8%; Peto-Peto P = .049). These patients also showed a trend to a lower incidence of myocardial infarction (4.2% vs 6.1%; Peto-Peto P = .360).

Conclusions: In real-world patients presenting with STEMI and multivessel coronary artery disease, a multivessel PCI strategy was associated with lower rates of mortality, unplanned repeat revascularization, and major acute cardiovascular events.

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Revascularización multivaso o solo de la lesión culpable en pacientes con infarto de miocardio con elevación del segmento ST: análisis de un registro a 8 años

RESUMEN

Introducción y objetivos: El tratamiento óptimo de los pacientes con enfermedad coronaria multivaso e infarto de miocardio con elevación del segmento ST (IAMCEST) tras una intervención coronaria percutánea (ICP) primaria es motivo de controversia. Con este trabajo se pretende analizar el impacto pronóstico de la ICP multivaso frente a ICP solo de la arteria origen del infarto en pacientes con IAMCEST y enfermedad multivaso en la práctica clínica real.

Métodos: Estudio de cohortes retrospectivo que incluyó a 1.499 pacientes consecutivos con diagnóstico de IAMCEST sometidos a ICP primaria entre enero de 2008 y diciembre de 2015. El 40,8% (n = 611) tenía enfermedad coronaria multivaso. Se realizó un análisis mediante puntuación de propensión emparejada, con lo que se obtuvieron 2 grupos de 215 pacientes emparejados según se sometieran a ICP multivaso o solamente de la arteria culpable del infarto.

Resultados: Durante el seguimiento (mediana, 2,36 años), tras emparejar por puntuación de propensión, los pacientes sometidos a ICP multivaso tuvieron menos mortalidad (el 5,1 frente al 11,6%; Peto-Peto p = 0,014), revascularización no planeada (el 7,0 frente al 12,6%; Peto-Peto p = 0,043) y eventos cardiovasculares adversos mayores (el 22,0 frente al 30,8%; Peto-Peto p = 0,049). Pese a que no resultó significativa, la tasa de reinfarcto fue menor (el 4,2 frente al 6,1%; Peto-Peto p = 0,360).

Palabras clave:

Infarto de miocardio con elevación del segmento ST

Enfermedad coronaria multivaso

Intervención coronaria percutánea

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Conclusiones: La estrategia de realizar ICP multivaso en los pacientes con IAMCEST y enfermedad multivaso se asoció a una disminución de la mortalidad, la revascularización no planeada y los eventos cardiovasculares adversos mayores durante el seguimiento de una población de la práctica clínica real. © 2016 Sociedad Española de Cardiología. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Abbreviations

MACE: major acute cardiovascular events
MVD: multivessel coronary artery disease
PCI: percutaneous coronary intervention
STEMI: ST-segment elevation acute myocardial infarction

INTRODUCTION

Multivessel coronary artery disease (MVD) is a frequent angiographic finding in ST-segment elevation acute myocardial infarction (STEMI), occurring in more than 40% of patients undergoing primary percutaneous coronary intervention (PCI).^{1,2} Compared with patients with single-vessel disease, those with MVD have worse in-hospital and long-term prognosis, including repeat admissions for myocardial infarction and revascularization procedures.²⁻⁴ To overcome this scenario, the concept of preventive nonculprit lesion PCI has emerged as an alternative to the traditional strategy of infarct-related artery only revascularization. However, undertaking PCI in nonculprit lesions can have potential complications. Current European Society of Cardiology guidelines recommend that primary PCI should be limited to the culprit vessel (with the exception of cardiogenic shock and persistent ischemia) and that staged revascularization of nonculprit lesions should be considered if there are symptoms or ischemia within days to weeks after primary PCI.^{5,6} Recent published trials, such as PRAMI,⁷ CvLPRIT⁸ and DANAMI-3 PRIMULTI,⁹ have questioned the need, timing, and criteria to perform multivessel revascularization in

patients with STEMI, showing better outcomes with complete immediate or staged revascularization.

To define the impact of multivessel PCI vs culprit-only PCI in real-world patients, we analyzed our 8-year retrospective registry with 1499 STEMI patients undergoing primary PCI.

METHODS

Study Population

This was a retrospective single-center observational cohort study that enrolled consecutive patients with a diagnosis of STEMI who underwent primary PCI at the University Clinical Hospital of Santiago de Compostela, Spain, between January 2008 and December 2015 (n = 1499). About 40.8% (n = 611) patients had MVD. To analyze the impact of multivessel vs culprit vessel-only PCI, patients with MVD and the following characteristics were excluded: *a*) Killip class IV at admission (n = 58), *b*) a prior history of coronary artery bypass grafting (n = 5), and *c*) planned coronary artery bypass grafting after primary PCI (n = 13), as illustrated in Figure 1. The study population consisted of 535 patients with MVD, of which 55.0% (n = 294) underwent multivessel PCI and 45.0% (n = 241) underwent culprit vessel-only PCI. The decision to perform nonculprit coronary artery percutaneous revascularization and its timing were left to the discretion of the interventional cardiologist and clinical cardiologist or to the Heart Team, when appropriate. The factors influencing this decision were recorded.

Primary PCI was undertaken according to the European Society of Cardiology guidelines^{10,11} and the operators' routine practice and could include aspiration thrombectomy, heparin, or glycoprotein IIb/IIIa inhibitor administration. Antiplatelet therapy included

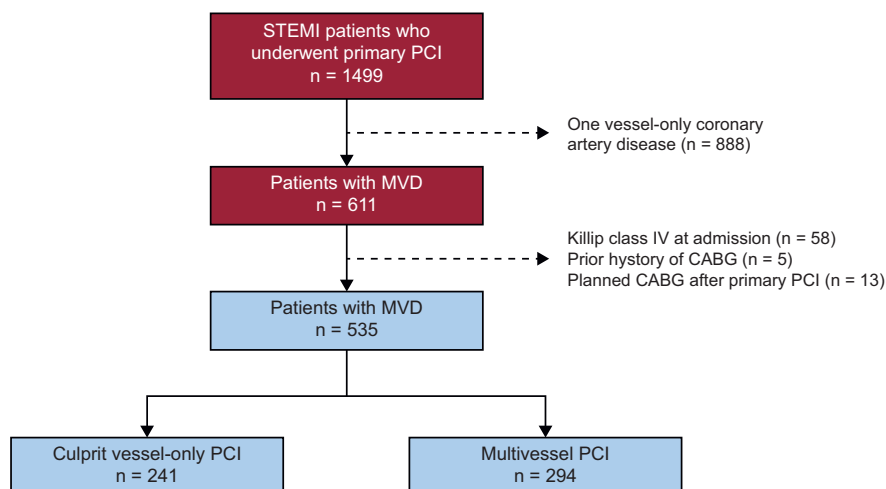


Figure 1. Study flow chart. CABG, coronary artery bypass grafting; MVD, multivessel disease; PCI, percutaneous coronary intervention; STEMI, ST-segment elevation acute myocardial infarction.

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