Clinical factors associated with microvascular obstruction in early presenters of ST-segment elevation myocardial infarction

A.L. Rivero Monteagudo, B. Arroyo Rivera, C. Garcia Talavera, M. Cortes Garcia, J.A. Franco Pelaez, F. Navarro Del Amo, J. Tunon Fernandez

Foundation Jimenez Diaz, Cardiology, Madrid, Spain

Background: Microvascular obstruction (MVO) is a phenomenon that occurs frequently even after primary coronary intervention with recanalization of the infarct-related artery (IRA) and it has been shown to increase the risk of adverse cardiovascular events in ST-segment elevation myocardial infarction (STEMI) patients. The most important clinical predictor of MVO is ischemia duration, but there is a lack of information regarding predictor factors in promptly revascularized patients.

Methods: From January 2007 to October 2017, 987 patients with STEMI that underwent urgent coronary angiography were retrospectively enlisted. We included 321 patients that were revascularized in ≤3 hours from symptom onset. Clinical and angiographic data were taken from hospital records. A univariate and multivariate Cox regression analysis was made to assess the relationship between MVO (defined as final TIMI <3 in IRA) and potential predictors.

Results: From the 321 patients included, 76.9% were male and the mean age was 63.6±13.4 years. LVEF at admission was 46.2±12%. The mean time between symptom onset and wire crossing was 2.2±0.6 hours and MVO was found in 43 cases (13.4%). Descriptive data of predictor factors and their association with MVO are shown in Table 1. After the multivariate Cox regression analysis, smoking was a protector factor of MVO (OR 0.39 [0.16–0.96]). Age (OR 1.03 [1.01–1.06]) and Killip class III-IV at admission (OR 5.96 [2.1–16.4]) were directly associated with MVO. No other clinical variables were independently associated with the occurrence of MVO.

Conclusions: In very early presenters of STEMI, age and Killip class III-IV at admission were clinical predictor factors of MVO. Current smoking could carry a protector mechanism for MVO in this population, that is yet to be confirmed with prospective studies.

Table 1

Variable	Mean / %	Univariate			Multivariate		
		OR	IC 95%	p	OR	IC 95%	p
Age (ys)	63.6±13.4	1.04	1.01–1.06	0.003	1.03	1.01–1.06	0.04
HBP	45.8%	1.4	0.75–2.72	0.28		NA	
DM	17.4%	1.78	0.83–3.79	0.13	1.04	0.37–2.9	0.94
Hyperlipidemia	46.7%	0.88	0.46–1.69	0.72		NA	
Obesity	19.9%	0.61	0.25–1.53	0.29		NA	
Smoker	41.1%	0.45	0.22–0.92	0.03	0.39	0.16–0.96	0.04
Stroke	6.2%	3.06	1.11–8.45	0.03	1.17	0.32–4.32	0.81
Killip class III-IV	8.7%	4.37	1.86–10.28	0.001	5.91	2.13–16.38	0.001

HBP, high blood pressure; DM, diabetes mellitus; NA, not applicable.