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Clinical evidence of exaggerated inflammation in patients with a cardiogenic shock complicating ST-segment elevation myocardial infarction

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We characterized the degree of systemic and coronary inflammation and the impact of those on clinical state in patients with a cardiogenic shock complicating first anterior ST-segment elevation myocardial infarction (STEMI).

Methods: We recruited 14 consecutive patients with cardiogenic shock (10 men, 69 ± 12 years) and 18 well-matched baseline characteristics with- out shock (17 men, 64 ± 9 years) undergoing per- cutaneous coronary intervention (PCI) for an early phase of a first anterior STEMI in whom plasma level of cardiac enzyme was less elevated. We measured systemic and coronary levels of C-reactive protein, interleukin-6, and angiotensin II, and evaluated the relation of those to myocardial tissue-level reperfusion using both angiographic myocardial blush grade from 0 to 3, with the highest grade indicating normal myocardial perfusion, and a resolution of the sum of ST-segment elevation in 12-lead electrocardiogram.

Results: In-hospital mortality was 57% in patients with cardiogenic shock and 6% without shock ($p = 0.005$). Coronary levels of C-reactive protein (9.2 ± 6.9 vs. 1.7 ± 2.1 mg/L, $p = 0.001$), interleukin-6 (379 ± 137 vs. 24 ± 20 pg/mL, $p = 0.003$), and angiotensin II (19 ± 10 vs. 10 ± 6 pg/mL, $p = 0.010$) were extremely higher in patients with shock than without shock. Interleukin-6 and angiotensin II, but not C-reactive protein, revealed higher in coronary levels than in systemic levels. The presence of both myocardial blush grade < 3 and ST-segment resolution< 50%, indicating failed myocardial tissue- level reperfusion, was found in 8 patients withshock and 3 without shock (57% vs. 17%, $p = 0.026$). A multivariate regression analysis show- ed culprit coronary levels of angiotensin II as a special association with failed myocardial tis- sue-level reperfusion ($p = 0.012$).

Conclusions: The exaggerated systemic and coronary inflammation, presumably associated with myocardial mal-reperfusion, was presented in patients with a cardiogenic shock complicating first anterior STEMI.

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