

Multisite vascular disease in acute coronary syndromes: increased in-hospital mortality and no improvement over time

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INTRODUCTION:

Limited data are available on the impact of multisite artery disease in patients with acute coronary syndromes. In particular, it is unknown whether the outcomes of those high-risk patients have improved over time. Therefore, we addressed the multisite artery disease patient population enrolled in the Swiss nationwide prospective acute coronary syndromes cohort study AMIS Plus over two decades.

METHODS:

All patients enrolled from January 1999 to October 2016 were stratified according to the presence of isolated coronary artery disease or multisite artery disease, defined as coronary artery disease with known concomitant vascular disease (i.e. cerebrovascular disease and/or peripheral artery disease). Multisite artery disease 1 (MSAD1) and multisite artery disease 2 (MSAD2) defined patients with one and two additional vascular conditions, respectively. Primary outcome measures were in-hospital mortality and major adverse cardiovascular events (defined as re-infarction, stroke or death).

RESULTS:

Among a total of 44,157 patients, 39,613 (89.7%) had coronary artery disease only while 4544 (10.3%) had multisite artery disease (4097 (9.3%) had MSAD1 and 447 (1.0%) had MSAD2). Compared with patients with coronary artery disease only, multisite artery disease patients were older, had a longer delay from symptom onset to hospital admission, had more frequently atypical presentation, presented more frequently with non-ST-segment elevation acute coronary syndromes, were more frequently in Killip class III/IV, had higher Charlson comorbidity index, more frequently had three-vessel coronary artery disease and were treated less frequently with evidence-based treatments such as aspirin, P2Y inhibitors, or beta-blockers. Similarly, multisite artery disease benefitted less frequently from coronary angiography as well as percutaneous coronary revascularisation. In-hospital mortality was 10.9% in multisite artery disease patients and 4.4% in coronary artery disease-only patients ($P < 0.001$). Corresponding major adverse cardiovascular events rates were 13.4% and

5.4% ($P < 0.001$). Cardiogenic shock, re-infarction and cerebrovascular events were significantly more frequent in multisite artery disease patients compared with coronary artery disease-only patients. In multivariable logistic regression analysis, multisite artery disease was identified as an independent predictor of in-hospital mortality (odds ratio 1.69, 95% confidence interval 1.47-1.94, $P < 0.001$). Among multisite artery disease patients, mortality was the highest in MSAD2 individuals (15.4% vs. 10.4% among MSAD1 patients, $P = 0.001$), the same was true for the major adverse cardiovascular events rates (19.1% in MSAD2 patients vs. 12.7% in MSAD1 patients, $P < 0.001$). When stratified for the decade of enrollment, no improvement in mortality or major adverse cardiovascular events rates was observed in multisite artery disease patients.

CONCLUSION:

Patients presenting with multisite artery disease were less likely to receive evidence-based therapies than coronary artery disease-only patients and had increased in-hospital morbidity and mortality, with no improvement over time. The worse outcomes were observed among MSAD2 patients. These results should prompt awareness for multisite artery disease as a high-risk condition in the setting of multisite artery disease.

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