Feasibility, safety and prognostic relevance of acetylcholine provocative testing in patients with myocardial bridge: a prespecified analysis of the RIALTO Registry

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Introduction: Myocardial bridge (MB) is the most frequent inborn coronary artery variant. Although MB has long been considered a benign entity, a growing body of evidence has suggested its association with angina and adverse cardiac events. However, to date, no data on long-term prognosis are available, nor on therapies improving cardiovascular outcomes. We are currently conducting an ambispective, observational, multicentre, study in which we enroll patients with a clinical indication to undergo coronary angiography (CA) and evidence of MB, aiming to describe the incidence of symptoms and cardiovascular events at baseline and at long-term follow-up (FUP). The role of invasive full-physiology assessment in modifying the discharge therapy and eventually the perceived quality of life and the incidence of major cardiovascular events will be analysed. Herein, we assessed the safety, feasibility, and the prognostic role of invasive acetylcholine (Ach) testing in unmasking coronary artery spasm in patients with MB.

Materials and Methods: A total of 444 patients with MB were consecutively enrolled in the RIALTO registry. 73 underwent intracoronary Ach testing. Both patients with acute and chronic presentations were included. The decision to perform the provocative testing was left to the operator’s judgment and performed according to a standardized protocol. The incidence of major and minor complications during Ach testing was recorded.

Furthermore, the incidence of major adverse cardiac events (MACE), defined as the composite of cardiac death, myocardial infarction, and cardiac hospitalization, and the rate of patients with a Seattle Angina Questionnaire (SAQ) Angina Summary Score < 70 were compared between patients with and without coronary artery spasm.

Results: Epicardial spasm was diagnosed in 58.9% of MB patients, whereas microvascular spasm in 6.9% according to COVADIS criteria. The most frequent location of coronary artery spasm (CAS) was the intramural segment. Regarding safety, no fatal or major non-fatal events occurred. The rate of minor side effects was low (12.3%) and comparable between acute and chronic patients. MACE occurred in 12 (18.8%) patients, without significant differences in the rate of MACE between the study groups (18.2% in patients with a positive Ach testing vs. 20% in patients with a negative Ach testing; log-rank = 0.88). However, the rate of significant angina (SAQ < 70) was higher in the Ach+ group compared with the Ach- group (47.7% vs. 25%; log-rank = 0.04).

Conclusions: CAS often coexists with MB. The execution of Ach testing in this cohort proved to be safe and feasible, identifying a subgroup of patients with a higher angina burden and poor quality of life, although with a comparable rate of MACE at 2 years. In our study, invasive provocative test improved the ability to unmask vasomotor disorders associated with MB and to prescribe a tailored therapy with calcium antagonists, which improved symptoms.