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Incidence and clinical impact of type A aortic dissection detected during invasive coronary procedures. Results from an international, multicentre, all-comer registry

J.M. Montero Cabezas[1], J. Molina Martin De Nicolas[2], A. Jurado Roman[3], I. Karalis[1], F. Van Der Kley[1], M.J. Schalij[1]

[1]Leiden University Medical Center, Department of Cardiology, Leiden, Netherlands (The); [2]Clinique du Pont de Chaume, Department of Cardiology, Montauban, France; [3]Hospital General de Ciudad Real, Department of Cardiology, Ciudad Real, Spain

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Background: Type A aortic dissection (AD) is an extremely severe condition with high mortality. Its clinical presentation may mimic other conditions such as myocardial ischemia. Furthermore, coronary hypoperfusion may occur. This may result in misdiagnosis and subsequent referral to the cath-lab, implying potential catastrophic consequences.

Purpose: To determine the incidence and clinical impact of type A AD detected at the cath-lab in all-comers referred for invasive coronary procedures (both diagnostic and therapeutic).

Methods and results: Data was obtained from three high-volume centers from different countries. 41.186 procedures performed in all-comers between 2011–2018 were analyzed, of which 20.067 (49%) were PCIs. Iatrogenic AD resulting from the procedure were excluded. In 17 patients (0.002%; age 75±11 years, 72% male) a type A AD was detected during the procedure. The diagnosis was established by aortic angiography in 15 (88%); in 2 (12%) the diagnosis was suspected based on difficult coronary cannulation or the presence of a fluoroscopically-visible fluttering flap, requiring confirmation with aortic imaging tests. The procedure was performed in a emergent fashion in 14 patients (89%): due to suspected acute coronary syndrome in 11 (65%) (8 [72%] STEMI and 3 [18%] NSTEMI) and because of out of hospital cardiac arrest in 4 (24%). Loading dose of antiplatelets (aspirin 76%, P2Y12 inhibitors 100%) and heparin (100%) were administered in the majority of patients. Either the left main or right coronary artery ostia were involved in 8 patients (47%), although in a significant number of cases coronary anatomy was not fully evaluated due to problematic cannulation of the coronary arteries (left main 18%, right coronary artery 30%). Previous history of aortic root dilatation was present in 5 cases (30%). None of the patients had previous history of connective tissue disorders or bicuspid aortic valve. CT scan was feasible in 9 cases (59%). A DeBakey type I AD was observed in 8 patients (47%) and a DeBakey type II in 9 cases (53%). Overall in-hospital mortality rate was 59% (10 patients). 3 patients (30%) died during the procedure. 10 (59%) underwent surgical treatment (4 of them with concomitant aortic valve replacement). Perioperative mortality rate was 30% (1 due to hemorrhagic stroke, 1 due to massive bleeding during surgery; 1 due to cardiac tamponade). All patients who were not candidates for surgery (7 cases, 41%) died during admission. Patients successfully discharged presented a median survival of 17 months (4–78).

Conclusions: The detection of a type A AD during invasive coronary procedures is rare and is predominantly observed in patients referred for urgent interventions. The overall in-hospital mortality is very high (59%) and therefore prompt identification by the operator is mandatory. Surgery, when feasible, is the treatment of choice, although perioperative mortality rate is high, mostly due to bleeding complications.