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ABSTRACT

Evaluation of prognostic factors in patients submitted to coronarography with a simultaneous angiography of renal arteries in a 10-year follow-up

KORONEF trial was a prospective, one-centre, observational and descriptive study. The aim of the study was to assess prognostic factors in patients undergoing coronary angiography with simultaneous renal artery angiography during a 10-year observation. Between June and December 2009, a total of 492 patients were sequentially included in the study. In the studied population, the most common indication for coronary angiography was the planned diagnosis of coronary artery disease. In coronary angiography, no significant angiographic changes in coronary arteries were found in 128 (26%) patients, while the presence of triple-vessel coronary artery disease was observed in 86 (23.4%) individuals. Altogether, 211 (46.1%) patients were qualified for transdermal revascularisation. The patients received therapy according to the standards, with 90.2% patients prescribed acetylsalicylic acid at discharge, 91.1% - angiotensin-converting enzyme inhibitor /sartan, 92.5% - beta-blocker, and 93.5% - statin. Additionally, renal artery angiography was performed in all the patients, which revealed stenosis of at least 50% in 35 (7.1%) patients.

Patients with significant renal artery stenosis more often had the diagnosis of diabetes (40% vs. 24.9%, $p = 0.049$), stroke in medical history (22.9% vs. 5.3%, $p < 0.001$), chronic kidney disease (28.6% vs. 8.3%, $p < 0.001$) and chronic kidney disease treated with haemodialysis (5.7% vs. 0.4%, $p = 0.027$). Patients with significant renal artery stenosis more often underwent coronarography due to acute coronary syndrome (48.6% vs. 36.9%, $p = 0.016$) and they were more often diagnosed with two-vessel disease (40.0% vs. 27.1%, $p = 0.009$). These patients were also significantly more often subjected to PCI (57.6% vs. 45.2%, $p = 0.023$). At discharge, patients with renal artery stenosis $\geq 50\%$ were more often prescribed a Ca-blocker (40.0% vs. 24.1%, $p = 0.036$), a loop diuretic (37.1% vs. 16.8%, $p = 0.003$) and vitamin K antagonist (17.1% vs. 6.6%, $p = 0.034$), and they less often received a beta-blocker (82.9% vs. 93.2%, $p = 0.038$).

Additionally, prognostic data for the study group: rates of death, myocardial infarctions, strokes, CABG and PCI were subject to analysis. The median follow-up was 10.2 years (min. 5.9 years; max. 10.3 years). In the study population death to any cause was noted in 29.9% patients, myocardial infarction in 11.8%, and cerebral stroke in 4.9%. No statistically

significant differences were found between the groups. An analysis was also conducted to investigate survival in relation to additional variables such as sex, age, or comorbidities in the study group. It was observed that sex, BMI, renal stenosis, and CCS vs. ACS do not affect prognosis, while a significantly worse prognosis was seen in older patients, aged > 65, and patients with a history of myocardial infarction and cerebral stroke. Survival was subject to analysis in the subgroup of patients with renal artery stenosis of ≥ 50% also considering the impact of additional variables such as sex, age, or comorbidities. In this group only patients with the history of myocardial infarction had worse prognosis. An attempt was then made to identify predictors of death due to any cause in the general population in Cox regression model. In the general population statistically, significant predictors proved to be age 65-75 years (HR 2.88), age > 75 years (HR 8.07), no diabetes (HR 0.63), no history of myocardial infarction (HR 0.61), no chronic kidney disease (HR 0.45), unstable angina (HR 0.37) and left ventricular ejection fraction > 60%, (HR 0.43). This was followed by an attempt to identify predictors of all-cause mortality in patients with renal artery stenosis < 50% in Cox regression model. In a multivariate model, statistically significant predictors proved to be: age 65-75 years (HR 2.21), age > 75 years (HR 5.99), no diabetes (HR 0,64), no chronic kidney disease (HR 0.57) and left ventricular ejection fraction > 60% (HR 0.34). In patients with renal artery stenosis ≥ 50% there was only one statistically significant predictor, namely, dyslipidemia (HR 5.52).

The following conclusions were drawn basing on the results obtained:

1. Patients undergoing coronarography were usually men aged over 60 with multiple comorbidities such as arterial hypertension, dyslipidemia, diabetes, the history of myocardial infarction and obesity.

2. Despite full pharmacotherapy adhering to current guidelines, the percentage of adverse events such as myocardial infarction, stroke, and death was relatively high, confirming a poorer prognosis in patients with cardiovascular diseases.

3. In the study population the prevalence of angiographically significant renal stenosis (≥ 50%) was 7.1%.

4. There were more women in the group of patients with significant renal artery stenosis; the patients tended to be older and they were more often diagnosed with diabetes. The patients more often had the history of stroke and chronic kidney disease, including CKD treated with hemodialysis. In this group of patients, coronary angiography was more frequently performed due to acute coronary syndrome, multi-vessel disease

predominated, and there was a prevalence of left main coronary artery stenosis. These patients also underwent percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) significantly more often.

5. In a 10-year follow-up the all-cause mortality rate was 29.9% and there was no statistically significant difference between the patients with and without significant renal artery stenosis.

6. In the general population significant predictors of death were: age 65-75 years (HR 2,21), age > 75 years (HR 5.99), no diabetes (HR 0.64), no chronic kidney disease (HR 0.57) and left ventricular ejection fraction > 60%, (HR 0.34). In the group of patients with significant renal artery stenosis the only statistically significant predictor was dyslipidemia (HR 5.52).