Comparison of long-term outcomes between men and women after percutaneous coronary intervention

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Background : Over the past decade, several studies have displayed conflicting results regarding worst cardiovascular outcomes of women with obstructive coronary artery disease (CAD) compared with men.

Purpose : To assess the impact of gender on poor outcomes after percutaneous coronary intervention (PCI).

Methods : Consecutive men and women admitted for PCI between the 1st of January 2008 and the 31st of December were included and prospectively followed-up in this monocentric cohort study. All type of presentations and indications for PCI were considered. Risk factors and co-morbidities as well as angiographic results and procedures were collected at baseline. Major adverse cardiovascular and cerebrovascular events (MACCE) were collected through consultations, calls and death certificate until January 2019. Medical forms and documents regarding adverse events and causes of death were reviewed and adjudicated by two independent clinicians according to the standard definitions. The primary endpoint was all-cause mortality according to gender.

Results : A total of 3524 patients, including 2720 men (77.1%) and 804 women (22.8%), were followed-up for a median time of 7.0 years (IQ1: 5.4 ; IQ3: 7.2). The follow-up rate was 97.6%. Women were older at baseline (70 ± 13.1 vs. 64.6±12), smoked less often (18.9 % vs. 30.4 %) but suffered more frequently of hypertension (67.9 % vs. 58.1%) and chronic kidney disease (42.6 % vs. 22.7%) (**table 1**). All-cause death occurred for 30.3% (n=1070) and MACCE for 40.9% (n=1443) of patients. In unadjusted analyses, women had a higher risk of all-cause mortality (35.3% vs 28.9%, HR=1.25, 95%CI[1.09-1.43], p=0.0015) and cardiovascular mortality (61% vs. 57 %, HR=1.31, 95%CI=[1.10-1.56]) (**figure 1 and 2**) but there was no difference on occurrence of MACCE (HR=0,91, 95%CI=[0.93-1.22]). After adjustment for baseline cardiovascular risk factors, presentation and severity of coronary disease, women and men shared a similar risk of mortality along time (adHR=0.91, 95%CI[0.79–1.05]) (**figure 3**).

Conclusion : In this long-term follow-up cohort, women had a higher risk of all-cause and cardiovascular mortality after PCI in unadjusted analyses. However, gender was not independently associated with mortality after adjustment for cardiovascular risk factors.

Table 1. Comparative baseline characteristics according to sex

	Overall N=3524	Men N=2720	Women N=804	p
Cardiovascular risk factors and medical history				
Age (years), median, [IQR]	65.4 [56.9 – 75.7]	63.9 [56.2 – 74.1]	71.4 [60.8 – 71.4]	0.001
Family history of CAD	617 (17.5%)	471 (17.3%)	146 (18.2%)	0.58
Dyslipidemia	1980 (56.2%)	1557 (57.2%)	423 (52.6%)	0.02
BMI (kg/m^2), median, [IQR]	25.7 [23.4 – 28.6]	25.0 [22 – 28.6]	25.9 [23.8 – 28.6]	0.52
Diabetes mellitus	1022 (29%)	787 (28.9%)	235 (29.2%)	0.87
Hypertension	2125 (60.3%)	1579 (58.1%)	546 (67.9%)	<0.001
Active smoking	979 (28.3%)	827 (30.4%)	152 (18.9%)	<0.001
Chronic kidney disease*	962 (27.3%)	618 (22.7%)	344 (42.8%)	<0.001
History of MI or CABG or PCI	1249 (35.4%)	1029 (37.8%)	220 (27.4%)	<0.001
Clinical presentation				
MI	1876 (53.2%)	479 (59.6%)	1397 (51.6%)	0.014
Stable angina	729 (20.7%)	174 (21.6%)	555 (20.4%)	0.43
Silent ischemia	613 (17.4%)	96 (11.9%)	517 (19.0%)	< 0.001
Other	270 (7.7%)	50 (6.2%)	220 (8.0%)	0.71
Angiographic characteristics				
Left main	200 (5.7%)	168 (6.2%)	32 (4.0%)	0.018
Left anterior descending	2263 (34.2%)	1731 (63.6%)	532 (66.2%)	0.19
Left circumflex	1632 (46.3%)	1333 (49.0%)	299 (37.2%)	<0.001
Right coronary artery	1935 (54.9%)	1515 (55.7%)	420 (52.2%)	0.083
Lesion on CABG	163 (4.6%)	143 (5.3%)	20 (2.5%)	0.001
Number of vessels				
1 vessel	1716 (48.7%)	1260 (46.3%)	456 (56.7%)	<0.001
2 vessels	1076 (30.5%)	864 (31.8%)	212 (26.4%)	0.004
3 vessels	732 (20.8%)	596 (21.9%)	136 (16.9%)	0.002
Multivessel disease	1809 (51.3%)	1461 (53.7%)	348 (43.3%)	<0.001

Fig.1 Cumulative incidence of all-cause death according to gender

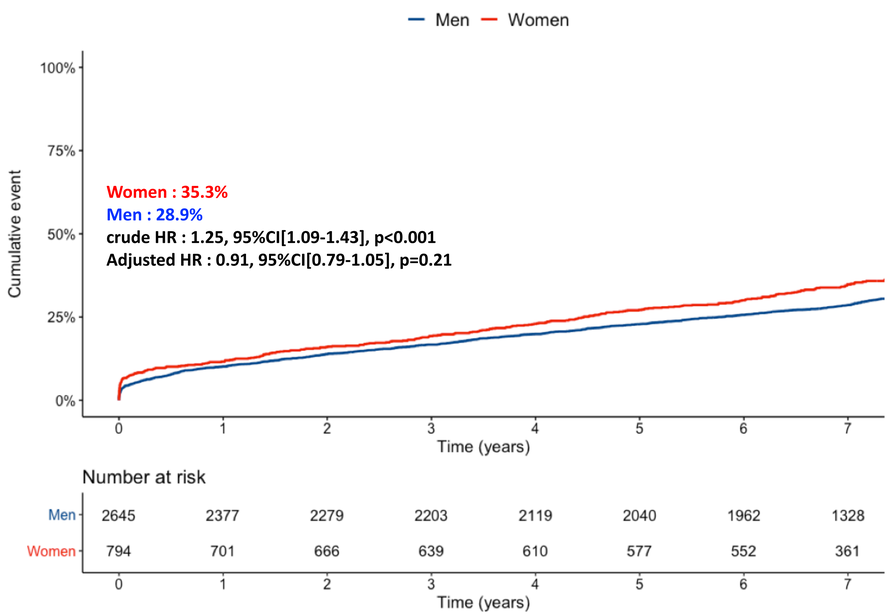


Fig.3 Forest plot of adjusted HR for all-cause mortality

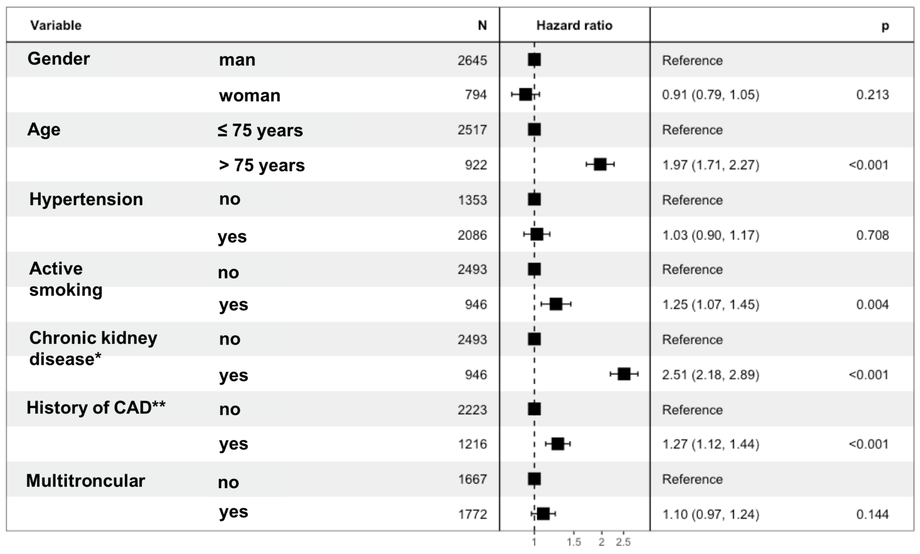
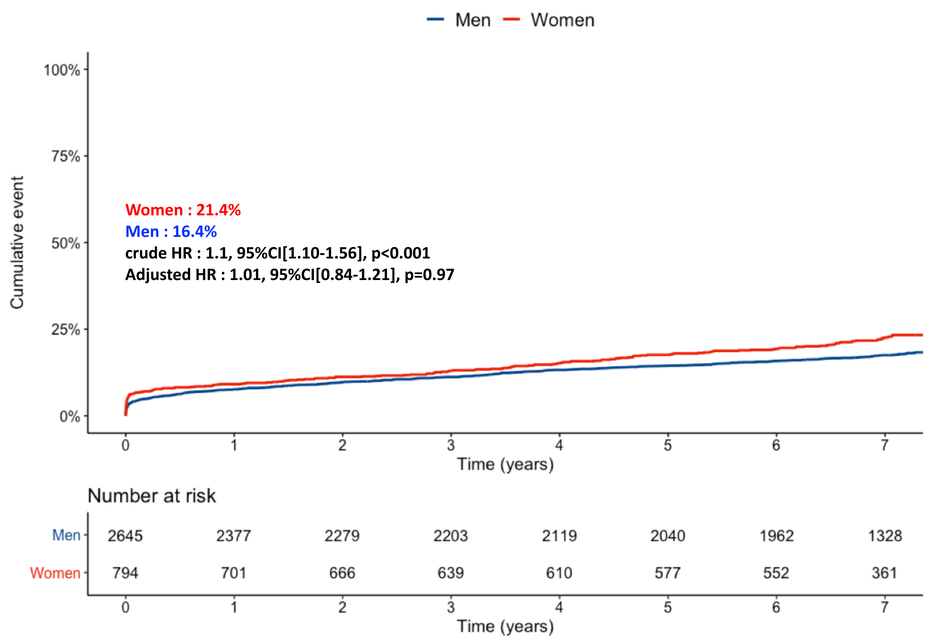


Fig.2 Cumulative incidence of cardiovascular death according to gender



Disclosures : MZ : FFC, Institut Servier, BMS/Pfizer ; MK : FFC, institut servier, NH : Philips, GE healthcare, Bayer, Laboratoires Servier, Novartis Pharma, Astra Zeneca, BMS, MSD, FFC, and ICAN JS : Amed, Amgen, Algorythm, Astra-Zeneca, Bayer, Daiichi-Sankyo, Eli Lilly, Fondation de France, Gilead Science, Iroko Cardio, Sanofi-Aventis and Saint-Jude Medical. JPC :AstraZeneca, Bayer, Bristol-Myers Squibb, Daiichi-Sankyo, Eli-Lilly, Fédération Française de Cardiologie, Lead-Up, Medtronic, MSD, Sanofi-Aventis, WebMD. GM : Abbott, Amgen, Actelion, AstraZeneca, Bayer, Boehringer Ingelheim, Boston-Scientific, Bristol-Myers Squibb, Beth Israel Deaconess Medical, Brigham Women's Hospital, Cardiovascular Research Foundation, Daiichi-Sankyo, Idorsia, Lilly, Europa, Elsevier, Fédération Française de Cardiologie, ICAN, Medtronic, Journal of the American College of Cardiology, Lead-Up, Menarini, MSD, Novo-Nordisk, Pfizer, Sanofi, Servier, The Mount Sinai School, TIMI Study Group, WebMD.