An analysis based on sex&gender in the chest pain unit of an emergency department during the last 12 years

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Background: Differences between female (F) and male (M) with coronary disease (CD) are related to time delays in detriment of women such as: hospital presentation, recognition of symptoms or an appropriate treatment. Further research based on sex and gender (S&G) is at important to confront the interplay of factors that shape health inequities.

Purpose: To do an analysis based on S&G of the admissions in the chest pain unit (CPU) of an emergency department (ED), comparing clinical features and also the physician's initial diagnostic orientation after the first evaluation of the patients (FEoP) .

Methods: This is an observational descriptive unicentric study of consecutive cases. We retrospectively analysed all the cases admitted in a CPU from 2008-2019 and recorded the cardiovascular risk factors (cvrf), and the clinical and electrocardiographic (ECG) features. We also recorded the final diagnostic after all the management in the CPU and the FEoP [based on the clinical history, physical examination and ECG; before other complementary examinations like troponins (Tnc)]. The characteristics were compared according to sex (F or M).

Results: 41828 patients were included (42% F), with an older median age in F [Md (RIC) [65 (47-78) vs 59 (43-73)] y.o.; $p < 0,001$]. We found a significant greater number of late presenters (≥12hours from symptoms onset) in F (41%vs37%;$p < 0,001$). F were associated to greater rates of obesity, hypertension and previous heart failure; M had greater rates of diabetes mellitus, previous known coronary disease and smoke or cocaine use. When we considered the patients with typical chest pain (TCP), no significant differences based on S&G were found. Women's ECG were more often interpreted as not having significant changes of ischemia. After the FEoP, the patients were classified as having an STEMI(♀1%vs♂2,5%;$p < 0,001$), non-STEMI (♀4,3%vs♂5,4%;$p < 0,001$) or non-diagnostic-ECG(93%). Among patients with non-diagnostic ECG, the physician's initial diagnostic was a probable acute coronary syndrome (ACS) in 42% of cases. F were less likely to be considered as having an ACS (♀39%vs♂44,5%;$p < 0,001$). This significant differences were maintained when:1) patients had ≥3cvrf [♀OR0,72; IC95%(0,63-0,83)]; 2)patients had ≥2cvrf [♀OR0,79; IC95% (0,74-0,86)]; 3)patients had TCP [♀OR 0,69; IC95% (0,64-0,74)]; 4)patients had ≥2cvrf and TCP [♀OR 0,72; IC95% (0,63-0,82)]. After the management in the CPU, a 14% of patients with non-diagnostic ECG were finally diagnosed with an ACS (36% if≥2cvrf and TCP). 3% of ACS were initially misdiagnosed (♀5%vs♂3% ;$p < 0,001$). After a multivariate analysis F is an independent risk factor for an initial impression of non-ACS.

Conclusions: There is a gender gap in the first evaluation of chest pain with an underestimation of risk in women, not only by the patients who are more often late presenters, but also by the physicians, which entails a higher risk of being misdiagnosed or late diagnosed.