Female versus male hearts

VALORIZATION

› RELEVANCE

Around 2012 most Dutch hospitals implemented high-sensitivity cardiac troponin (hs-cTn) assays in their laboratory to establish diagnosis of acute myocardial infarction (AMI). The common AMI diagnostic threshold is the 99th percentile upper reference limit (URL) of hs-cTn from a healthy reference population. During the implementation phase of hs-cTn assays in Europe, no attention was paid to sex-specific hs-cTn thresholds. Also European manufactures of hs-cTn assays inconsistently report sex-specific cutoffs. As a result, most Dutch hospitals apply overall hs-cTn 99th percentile URLs for AMI diagnosis. This thesis revealed that 99th percentiles URLs of hs-cTnI and hs-cTnT differ markedly between sexes, reflecting in lower female-specific 99th percentile URLs than men-specific 99th percentile URLs, which may contribute to underdiagnosis of AMI in women.

› TARGET GROUPS

This thesis is of interest for all crucial stakeholders that are involved in the clinical decision making of AMI diagnosis; physicians working at emergency department, internists, cardiologists and clinical laboratory specialists. In addition, our research might be also of interest for health insurance companies, diagnostic industry, social impact consultants and patients, as translating the results into a social cost benefit analysis helps to understand the potential broader social impact of sex-specific hs-cTn thresholds such as potential societal cost savings. Apart from AMI diagnosis, also the general practitioners may read this thesis with interest, as hs-cTn is a promising biomarker for preventive strategies.

› PRODUCT

Our research revealed that women have lower 99th percentile URLs of hs-cTn than men. In addition, we show that the statistical approach rather than reference population heterogeneity contributes to current discordant clinical decision limits of hs-cTnI and hs-cTnT.

› IMPLEMENTATION

Future research is needed to investigate whether a sex-specific algorithm of hs-cTn leads to a better identification and treatment of AMI in women, and subsequently, is required to improve prognosis in women after AMI. In addition, further study to downward adjustment of overall clinical decision limit of hs-cTnI for AMI diagnosis in relation to outcome needs urgent attention.

› WOMEN ARE NOT MEN AND MEN ARE NOT WOMEN, FORTUNATELY

During my PhD, I studied the (unmet) area of sex- and gender inequalities. I was surprised that basically each person, including myself, is biased on this matter. E.g. sex discrimination in regard to career perspectives is in most cases not based

on bad intentions, but rather on the lack of self-knowledge of your own sex-bias. I'm deeply grateful to the people in the past who have dared to stand up for women's rights at a time that it was not yet self-evident. Their huge statements have led to awareness, have been balanced and weighted over time, and will definitely lead to equal opportunities for women and men in the future. Now, four years later, with much more knowledge about sex- and gender inequalities, I hope that the results in this thesis will contribute to better healthcare for women and men.