CLINICAL AND ELECTROCARDIOGRAPHIC CHARACTERISTICS ASSOCIATED WITH ST ELEVATION MYOCARDIAL INFARCTION AMONG WOMEN: A REPORT FROM THE ACTIVATE-SF REGISTRY

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Background: Gender specific differences in acute coronary syndromes are well known. We sought to evaluate clinical and electrocardiographic factors associated with misdiagnosis among women presenting to the emergency department originally diagnosed as having an ST-segment elevation myocardial infarction (STEMI).

Methods: We analyzed the ACTIVATE-SF database, a registry of consecutive patients referred by emergency physicians for emergent cardiac catheterization for a possible STEMI at a tertiary care and an urban trauma center from October 2008 to April 2011. Univariate and multivariate analyses were performed to identify ECG variables associated with the presence of an angiographic culprit lesion.

Results: Of 472 STEMI activations by emergency room physicians, 109 (26.5%) were women. Of those, 55% were ‘false positive’ activations. Women were significantly more likely to be older (68+/14.3 vs 58+/13.9, p<0.001) and have more cardiovascular risk factors (diabetes (36% vs 18%, p<0.001), hypertension (68% vs 47%, p<0.001), hyperlipidemia (40% vs 27%, p=0.001), but there were no significant differences in territory of infarct on ECG (p=0.10), height of ST elevations (median 1.9mm vs 2.0mm, p=0.94) or number of leads with diagnostic ST elevations (median 2.5 vs 2.5, p=0.70) compared to men. Among clinical risk factors, a history of coronary artery disease (OR 3.18, 95% CI 1.33 to 7.59, p=0.01) or the absence of typical chest pain (OR 2.39, 95% CI 1.13 to 5.07, p=0.02) increased the likelihood of inaccurate STEMI diagnosis. An increase in the number of leads with ST elevations reduced the likelihood of false activation (OR 0.68, 95% CI 0.56 to 0.82, p<0.001). After adjustment for electrocardiographic covariates, there was a 47% reduction in the odds of a false positive activation for each additional ECG lead with diagnostic ST elevation (p = 0.01, 95%CI 0.33-0.86).

Conclusions: In this series of autonomous ED activations for putative STEMI, women had a very high rate of false-positive activations. Each additional ECG lead with diagnostic ST elevations was protective against false positive diagnosis while an known history of CAD lead to greater false positive rates.