Impact of Direct Cardiovascular Laboratory Activation by Emergency Physicians on False-Positive Activation Rates

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Abstract

Introduction: Door-to-balloon (DTB) time is critical to ST elevation myocardial infarction (STEMI) patients’ survival. Although DTB time is reduced with direct cardiovascular laboratory (CVL) activation by emergency physicians, concerns regarding false-positive activation remain. We evaluate false-positive rates before and after direct CVL activation and factors associated with false-positive activations. Materials and Methods: This is a retrospective single centre study of all emergency CVL activation 3 years before and after introduction of direct activation in July 2007. False-positive activation is defined as either: 1) absence of culprit vessel with coronary artery thrombus or ulceration, or 2) presence of chronic total occlusion of culprit vessel, with no cardiac biomarker elevations and no regional wall abnormalities. All false-positive cases were verified by reviewing their coronary angiograms and patient records. Results: A total of 1809 subjects were recruited; 84 (4.64%) identified as false-positives. Incidence of false-positive before and after direct activation was 4.1% and 5.1% respectively, which was not significant (P = 0.315). In multivariate logistic regression analysis, factors associated with false-positive were: female (odds ratio (OR): 2.104 [1.247-3.548], P = 0.005), absence of chest pain (OR: 5.369 [3.024-9.531], P <0.0001) and presence of only left bundle branch block (LBBB) as indication for activation (OR: 65.691 [19.870-217.179], P <0.0001). Conclusion: Improvement in DTB time with direct CVL activation by emergency physicians is not associated with increased false-positive activations. Factors associated with false-positive, especially lack of chest pain or LBBB, can be taken into account to optimise STEMI management.

Key words: Cardiac, Catheterisation