LETTER TO THE EDITOR

Electrocardiographic evaluation of successful reperfusion: Time to revisit

We read with interest the article entitled 'The modified Selvester QRS score: Can we predict successful ST segment resolution in patients with myocardial infarction receiving fibrinolytic therapy?' by Abdel-Salam et al. in one of the recent issues of the journal [1]. They found a higher mean modified Selvester QRS score in a group with ST segment reduction (STR) < 50%, and a QRS score above 4 as an indicator of unsuccessful reperfusion.

In ST elevation myocardial infarction, the principal aim is to restore the flow in the infarct related artery with either a pharmacological or percutaneous intervention. Later, successful reperfusion should be carefully evaluated. It can be achieved by using clinical, electrocardiographic (ECG) and laboratory parameters. The improvement of chest pain and the observation of an early peak in cardiac enzymes are considered successful reperfusion. At 90 min, more than 50% reduction in the ST segment is accepted as successful reperfusion [2]. Although there are different opinions concerning the use of ST-segment elevation in a single-lead or the sum of ST-segment elevation, the former should be used for patients with marked ST elevation, and the latter for patients with minimal ST segment elevation [3]. Some authors advocate the use of more than 50% STR for an anterior myocardial infarction, and more than 70% for an inferior myocardial infarction as an indicator of successful reperfusion [4]. For others, STR > 50% may show the patency of an epicardial artery, whereas STR > 70% may indicate the restoration of myocardial perfusion [5]. STR is actually a dynamic event. If not closely monitored, it can be easily overlooked. To avoid this, an ECG should be taken every 3–15 min, or the ST segment should be continuously monitored, for at least three hours after the treatment. Indeed, ST-segment changes may be silent in one in three patients. Continuous ST segment monitoring helps to capture the ST segment changes [6]. Another method is to follow the QRS vector and the ST elevation vector using continuous vectorcardiographic monitoring [7].

Successful reperfusion can be evaluated with the T-wave changes. An inversion of the terminal portion of the T wave may carry different meanings at different stages of myocardial infarction. A negative T wave on baseline ECG may indicate little chance of success, whereas an early inversion of the T wave after the therapy may be a sign of reperfusion. The QRS complex changes are usually detected by vectorcardiography. The QRS vector changes are less specific than the ST vector changes in assessing reperfusion [8]. Selvester QRS score used in the current study can be considered as a new parameter [1].

In addition, the observation of an accelerated idioventricular rhythm may be used as a specific but insensitive parameter. Signal averaged ECG may potentially be beneficial in assessing reperfusion. The development of bradycardia and hypotension due to Bezold-Jarisch reflex after the therapy may be a sign of reperfusion [8].

As a result, ECG seems still to be an integral part of the evaluation of reperfusion. It becomes easier to interpret the findings observed in the present study in the light of the above data about using ECG in assessing reperfusion.

References

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