LETTERS TO THE EDITOR

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Continental T-wave alternans monitoring and prediction of ventricular arrhythmias during coronary reperfusion therapy

The article by Takasugi et al., published online in the Journal on 12 February 2011, pertains to the innovative implementation of monitoring of T-wave alternans (TWA), starting in the emergency room and continuing during percutaneous coronary intervention (PCI) in 19 patients with an acute coronary syndrome, and the administration of intracoronary vasodilator in one patient with coronary spasm, for the prediction of the occurrence of ventricular tachyarrhythmia (VTA). The authors employed leads V1 and V5 and the modified moving average technique, and found higher values of TWA in patients with, than without, VTA. All in all, three patients had VTA, with two showing an increase in TWA prior to the onset of VT, and one showing macroscopic TWA, detected by a standard electrocardiogram (ECG) prior to VTA, but not by the TWA monitoring. This limited experience reveals a role for TWA in the prediction of VTA occurring in the peri-PCI period, and attests to the regionality of the TWA phenomenon (a previously noted characteristic), which may necessitate the use of the 12-lead ECG for its detection. Reperfusion is associated with major ST/T wave alterations and the phenomenon of ST/T reperfusion peak, which could be the reason for the upsurge of TWA, if there is a relationship between the magnitude of the TWA and the amplitude of the T-waves, used in the calculation of the TWA. This reader will be grateful to the authors if they provide him with a response to the following question: was there a relationship between the increase in the TWA and the possible increase in the T-wave amplitude in leads V1 and V5 in the patients who showed change in TWA prior to the occurrence of VTA? If there was such a relationship the upsurge of TWA was not due to increased arrhythmogenic risk, predicting the onset of VTA, but merely a consequence of an increased T-wave amplitude.

Conflict of interest: none declared.

References

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T-wave alternans monitoring in patients with acute coronary syndrome—letter to the editor

I read with great interest the paper by Takasugi et al. on continuous T-wave alternans (TWA) monitoring in patients with acute coronary syndrome undergoing revascularization. I agree with the authors that continuous TWA monitoring is likely to have a major role to play in the management of patients with an unstable electrical state. The study includes a relatively small number of patients. Can the authors provide data on how many patients with acute coronary syndrome underwent emergent reperfusion therapy in the recruitment period spanning 2 years and 3 months and reasons why only 20 patients were recruited? This is important to assess for possible selection bias to and to judge the applicability of the results to an unselected population of similar patients. It is interesting that the peak TWA before reperfusion was the best predictor of ventricular tachyarrhythmias that happened after reperfusion. This and the finding of associated QRS alternans suggest that the TWA seen in this setting is often secondary to depolarization alternans which in turn results from conduction abnormalities associated with the myocardial ischaemia. Thus, this seems to have a different pathophysiology compared with repolarization alternans which is usually primary in other settings.

The authors discuss the important issue of the leads to be used for monitoring. As suggested by the authors, a 12-lead holter system would be ideal. This is better not only because of the wider spatial coverage, but also because it provides true unipolar precordial recordings that provide more accurate TWA assessment as compared with bipolar leads in the 2- or 3-lead holter systems. Consideration can also be given to using modified leads resembling V2 and V4 instead of V1 and V5 as an alternative strategy as the mid-precordial leads are associated with the largest TWA amplitudes in general.

Finally, these interesting results beg to be studied in a larger population, where the incremental value of TWA in addition to usual clinical parameters for risk assessment may also be studied.

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References

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