Correspondence

Letters to the Editor must not exceed 400 words in length and must be limited to three authors and five references. They should not have tables or figures and should relate solely to an article published in Circulation within the preceding 12 weeks. Authors of letters selected for publication will receive prepublication proofs, and authors of the article cited in the letter will be invited to reply. Replies must be signed by all authors listed in the original publication. Please submit three typewritten, double-spaced copies of the letter to Herbert L. Fred, MD, % the Circulation Editorial Office. Letters will not be returned.

Heart Rate Turbulence: Higher Predictive Value Than Other Risk Stratifiers?

To the Editor:

We have read the article by Barthel et al1 describing the first prospective trial to determine the predictive value of heart rate turbulence (HRT) in patients after acute myocardial infarction. In previous studies, the ability of HRT to predict risk was only determined retrospectively.2 We would like to critically discuss here the uniqueness of the emerging risk factor, HRT, in comparison with other parameters. Interestingly, Barthel et al3 found that HRT was the strongest ECG-based risk predictor. This conclusion is surprising for 2 reasons, as follows. First, in an editorial comment3 on the original article by Schmidt et al,2 it was noted that the positive predictive value of HRT is only moderately higher than other ECG risk parameters, and it was suggested that some of the tests should be combined. However, Barthel et al4 considered only the heart rate variability (HRV) index and, as representatives, 3 other time domain parameters, but they did not analyze frequency domain, nonlinear HRV calculations, late potentials, prolonged QT interval, or T-wave alternans. Second, in a recent study,5 we investigated the suitability of short-term HRT (30 minutes) versus HRV analyses to characterize the regulatory differences in patients with dilated cardiomyopathy (DCM, n=37) and healthy controls (n=167). Although premature beats were excluded before HRV analysis, the highest correlation of HRT to HRV parameters was 0.94 in controls and 0.87 in DCM patients. The discrimination rate between DCM patients and controls was 86.3% for the complete data set (without HRT parameters). This rate was comparably high (88.0%) for the subgroup where HRT was applicable (only 14% of all data). The results of this study4 indicated that HRV and HRT have at least the same prognostic value, but HRV parameters have a significantly higher applicability. Moreover, we showed in 1998 that the predictive value of HRV using sophisticated parameters is significantly higher than the HRV index alone.5 Thus, taking only the HRV index as a reference parameter does not prove that HRT is the strongest risk predictor. We therefore think that the HRV parameters with the best predictive values as well as other ECG-based risk stratifiers should be retrospectively determined and then compared with HRT measurements. Thus, these observations cast doubt on the conclusion of Barthel et al1 that HRT is the strongest ECG-based risk predictor.

Niels Wessel, PhD
University of Potsdam
Potsdam, Germany
Franz-Volhard-Hospital, Charité Humboldt-University Helios-Clinics Berlin, Germany

Hagen Malberg, PhD
Forschungszentrum Karlsruhe GmbH
(Karlsruhe Research Center)
Karlsruhe, Germany

Thomas Walther, PhD
Department of Cardiology
Medical Center Benjamin Franklin

Response

We prospectively assessed heart rate turbulence (HRT) parameters in 1455 survivors of acute myocardial infarction6 and stated that, “in our patients, as in the MPIP, EMIAT, and ATRAMI populations, HRT was the strongest ECG-based risk predictor.” This exactly corresponds to the observations made and can hardly be called an inappropriate generalization.

Dr Wessel and his coworkers assessed heart rate turbulence in only 37 patients suffering from dilated cardiomyopathy, ie, in a different patient group. Besides, the goal of the study by Dr Wessel et al was different from that of our work. We investigated the prognostic value of different parameters on long-term prognosis after acute myocardial infarction, whereas Dr Wessel’s group researched the association with a certain pathology, that is, cardiac nonischemic patients with healthy controls. In addition, Dr Wessel et al used a nonvalidated algorithm for the detection of ventricular premature complexes based on arterial pressure tracings rather than on ECG recordings.2 Moreover, they restricted the duration of the recordings to 30 minutes, that is, <3% of the duration proposed in our studies.1,3 Again, it is not surprising that such a restriction diminishes the power of HRT.

Hence, to summarize, Dr Wessel et al (1) abridged the HRT method in a hardly acceptable way, (2) investigated only a tiny population of different patients and healthy controls, and (3) restricted their study to simple diagnostic separation of the subjects rather than investigating their prognostic stratification.

Petra Barthel, MD
Raphael Schneider, Dipl Ing
Axel Bauer, MD
Kurt Ulm, PhD
Claus Schmitt, MD
Albert Schöning, MD
Georg Schmidt, MD
1 Medizinische Klinik
Institut für Medizinische Statistik und Epidemiologie
der Technischen Universität München
München, Germany


Forschungszentrum Karlsruhe GmbH
Freie Universität Berlin, Germany


Heart Rate Turbulence: Higher Predictive Value Than Other Risk Stratifiers?
Niels Wessel, Hagen Malberg and Thomas Walther

Circulation. 2004;109:e150-e151
doi: 10.1161/01.CIR.0000118175.80885.28
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2004 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/109/9/e150

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/