

Early Heart Rate Variability and Its Circadian Rhythm in Survivors of Ventricular Fibrillation during Acute Myocardial Infarction

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Aim. Investigation of heart rate (HR), HR variability and circadian rhythm of HR variability in relation to the onset of ventricular fibrillation (VF) in the patients with acute myocardial infarction (AMI).

Methods. HR and HR variability were assessed in a 24-hour coronary care hospital stay of the patients with AMI in various portions of a complete 24-hour recording. Both the beginning and the length of the analyzed portions varied by 20 min (a total of 5,100 RR intervals).

Results. In comparison with the rest of the patients, the six survivors of VF had significantly lower 24-hour mean RR interval (a higher heart rate) and 24-hour RR mean standard deviation in RR intervals (HR variability) – 698.4 ± 157.9 vs. 823.5 ± 153.9 ms, and 41.5 ± 12.3 vs. 60.6 ± 23.2 ms, respectively.

Moreover, the patients with VF had a significantly lower average standard deviation during night than in the daytime. The average standard deviation in the rest of the patients with AMI did not show any difference in regard to the time of the day. HR variability in the patients with VF was the lowest from 12 PM to 5 AM, corresponding to the occurrence of VF. The rest of the patients showed an almost constant HR variability during the whole 24-hour period.

Conclusion. AMI patients at a high risk of VF have a faster HR than other patients, as well as a lower 24-hour HR variability. The latter is particularly low from 12 PM to 4 AM, which corresponds to the occurrence of VF.

Key words: heart rate; myocardial infarction; ventricular fibrillation