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## High-definition electrocardiography potential in identifying the reasons for unstable clinical course of coronary heart disease

Latfullin I., Kim Z., Teptin G., Mamedova L., Khromova A.  
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

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### Abstract

**Aim:** To investigate the correlation between clinical and morphological characteristics of coronary heart disease (CHD) and high-definition electrocardiography (HD-ECG) parameters. **Material and methods:** In total, 85 patients with unstable angina and ST segment depression (ST-UA) underwent HD-ECG during the angina attack, with late ventricular potential (LVP) analysis. One-year survival data were also analysed. Post-mortem histological examination of cardiac tissue was performed in 6 patients with ST-UA. **Results:** The important morphologic features of ST-UA included cardiomyocyte (CMC) dystrophy, due to acute and chronic myocardial ischemia, and acute injury in the cardiac conduction areas. LVPs were registered in 27 % of the ST-UA patients, mostly among people with transient myocardial ischemia (69,57 %). In patients who previously underwent myocardial infarction, LVP prevalence was lower (28,57 %). At the early stages of hospitalization, LVP were registered in 14 patients (60,87 %), while pharmacotherapy and clinical course stabilization were associated with decreased LVP prevalence (21,74 %). The study results suggest that in patients with acute coronary syndrome, LVP registration predicts not an adverse outcome, but a better prognosis. **Conclusion:** ST-UA is characterised by typical changes of CMC and myocardial stroma in posterior septal area, which result in metabolic, energetic, and electrical myocardial instability. LVPs could be used as a marker of functional (ischemic) myocardial heterogeneity in patients with ST-UA. LVP registration could be associated with a better prognosis in this clinical group.

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### Keywords

High-definition electrocardiography, Late ventricular potentials, ST segment depression, Unstable angina