

Differential Analysis of Nitroglycerin Influence on Myocardium in Coronary Artery Disease Patients

Alekseev Mikhail* and Alekseev Aleksandr

Abstract

Objective: The mechanism of nitrates action and its positive influence on the myocardium is unclear and cause sharp debates. In current study we made an attempt to open new sides of nitrates and myocardium interaction.

Methods: We examined 14 patients with G-criterion during an episode of chest pain. In 10 cases, the angina pectoris was cut off using nitroglycerin 0.8 mg sublingually. The recordings were made during the angina pectoris and nearly 16 minutes after NTG administration. This gives us the dynamic of changes in myocardium during drug administration. In 11 cases the CAD was proved by coronary angiography, but another 3 patient had non-cardiac cause of chest pain. The G-criterion is calculated by mathematical division of standard deviation by average value of T-wave amplitude values from 60 seconds in each electrocardiographic channel. Then the G-criteria from all channels were compared by relation the maximum value in ischemic zone to minimum value non-ischemic to get the second order G-criteria (SOG-criteria).

Results: It was shown that the arrest of angina in 10 cases occurred in the 2-4th minutes after NTG administration, but, according to the G-criterion and SOG-criterion, the decrease of myocardium ischemia (-51%) was basically in the 4-8th minutes, and the duration of ischemia reduction lasted from between 2 and 8 minutes. We registered the opposite reaction on NTG administration in all 11 CAD patients: in ischemic zone of the myocardium the G-criterion decreased on average -28.4% and in normal zone the G-criterion increased +54.5%.

Conclusion: This study indicates the different response of ischemic and normal myocardium on the same dosage of NTG, which can be used as diagnostic criterion for ischemic zones. The assessment of NTG effect should be based not only on the subjective patient's sensations, but also on the positive or negative evolution of objective criteria for myocardial ischemia.

Keywords:

Nitroglycerin; DACG; T-wave amplitude; Statistical criterion; Angina pectoris; Coronary artery disease; Acute coronary syndrome