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TACHYCARDIA PREVENTION DURING HEART PAIN ATTACK TREATMENT

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Background

Tachycardia (increased heart rate) in adults of middle age may be a marker of high cardiovascular risk. People whose heart rates increase from 70 beats per minute to more than 85 beats per minute over 10 years have a 90% increased risk of dying from heart disease compared to people whose heart rates stay around 70 beats per minute. Coronary artery disease is one of the most common diseases of the cardiovascular system in all economically developed countries. According to prospective studies, ischemic pain affects about 5-8% of men aged 20 to 44 years and 18-24.5% - between the ages of 45 to 69 years. Sinus tachycardia as well can present in more than a third of the patients with myocardial infarction (MI). Patients with sustained sinus tachycardia reflect a larger infarct that is more anterior with prominent left ventricular dysfunction, associated with high mortality and morbidity. Tachycardia in MI can reduce coronary blood flow and increase myocardial oxygen demand, aggravating the situation. In most cases, an attack of anginal pain or other ischemic pain can be subsided with sublingual nitroglycerin. However, in 8-12% of cases, nitroglycerin is not effective enough or is ineffective [3-4] for various reasons (tolerance to nitrates, vasospastic ischemia), in addition, nitroglycerin is often (85-90%) complicated by an attack of tachycardia lasting up to 1 minute, which aggravates the existing ischemia and creates a direct risk for complications of arrhythmia, even sudden death. The aim of the study is to develop a composition that allows preventing the occurrence of tachycardia during the treatment of coronary pain attack. The aim is achieved by ensuring that the developed composition contains nitroglycerin alcohol solution, menthol solution in menthyl isovalerate, and Hawthorn Tincture.

Materials and Methods

To study the effects of a new composition for preventing tachycardia in the treatment of ischemic heart pain, an original study including patients with ischemic pain episodes (n=85) was carried out. The diagnosis of patients was coronary artery disease, angina on exertion. The clinical study was performed based on the P. Stradiņš Clinical University Hospital. A new composition was administrated to the patients during the attack of ischemic pain: duration of pain attack, blood pressure and heart rate at the 1st, 3rd, 5th and 15th minute after receiving a new composition were recorded. In addition, 11 patients underwent ECG including ST segment evaluation (ST segment - it is part of ECG reflecting ischemia of the heart). SPSS 16.0 for Windows was applied for data processing. We used the methods of variation statistics, paired and independent Student's t-test, correlation analysis. The validity was considered significant at the level p-value <0.05. Nonparametric Wilcoxon and Mann-Whitney tests were also applied. When comparing the variation series, significant differences ($p<0.01$ and $p<0.05$) were considered. The study protocol, the agreement and participation protocols conformed to the Declaration of Helsinki for humanity in medicine and were approved by the Ethics Commission of Rīga Stradiņš University, Latvia. Conflict of interest was absent.

The results of the study showed that the new composition effectively relieves ischemic pain attack; its use is not followed by tachycardia. Average heart rate recorded during the study was 95, 92, 80 and 75 beats per minute during the 1st, 3rd, 5th and 15th minute after receiving the new composition, respectively. Blood pressure from the 1st to the 5th minute after receiving the new composition was on average 130/78 mm Hg; at the15th minute it was 126/75 mm Hg.

Conlusion

The new composition is effective in preventing tachycardia during the treatment of ischemic pain.

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