

# Influence of chronic obstructive illness of the lungs on the current of the postpericardiotomy syndrome in patients after coronary artery bypass grafting

## Abstract

One of the complications of aortocoronary bypass surgery is post-pericardiotomy syndrome, the development of which prolongs the length of stay in the hospital. It is known that this syndrome develops as a result of endothelial dysfunction and activation of the systemic inflammatory response. In this connection, it is necessary to compare the clinical data and the results of instrumental research methods to assess the effect of chronic obstructive pulmonary disease on the course of post-pericardiotomy syndrome. The study revealed that chronic obstructive pulmonary disease is not a predictor of the development of PCTS, but complicates its course.

**Keywords:** coronary artery bypass grafting, chronic obstructive pulmonary disease, post-pericardiotomy syndrome

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**Abbreviations:** coronary artery bypass grafting (CABG), chronic obstructive pulmonary disease (COPD), postpericardiotomy syndrome (PCTS)

## Introduction

Every year the volume of cardiosurgery operations and the number of clinics that perform such interventions grow.<sup>1</sup> At the same time, the percentage of postoperative complications is increasing, one of which is post-pericardiotomy syndrome (PCTS).<sup>2</sup> Post-pericardiotomy syndrome is a specific form of traumatic pericarditis that develops within the framework of a systemic inflammatory response (SIR).<sup>3,4</sup> Aortocoronary bypass grafting (CABG) through blood contact with an oxygenator and an artificial circulation device and through an ischemia / reperfusion mechanism mediates the activation of the complement system, activation of leukocytes and endothelial cells, overproduction of cytokines and activated oxygen metabolites.<sup>5-8</sup> The further development of SIR and PCTS, in general, can contribute to endothelial dysfunction. The main cause of development of endothelial dysfunction is considered to be deficiency of nitric oxide (NO). Normally NO is synthesized in small amounts by endothelial NO-synthase (eNOS).<sup>9-12</sup> According to different clinics, the frequency of development of PCTS after open heart surgery varies from 16 to 68%, with hemodynamically significant effusion in the pericardial cavity being formed only in 0.8-6% of cases. With timely diagnosis and treatment, the PCTS prognosis is favorable.<sup>13,14</sup> However, despite the advances made in the diagnosis of PCTS, scientific search for predictors of its occurrence is still ongoing, and data on the effect of chronic obstructive pulmonary disease (COPD) on the frequency of PCTS in patients with coronary artery disease (CAD) after CABG appear.

## Target

Comparative analysis of clinical and instrumental manifestations of postpericardiotomy syndrome in patients after CABG in the postoperative period, depending on the presence or absence of concomitant COPD.

## Materials and methods of research

A total of 76 patients operated under the conditions of a cardio-surgical department of the Rostov State Medical University clinic between 2013 and 2016 (all men) 41-75 years old (mean age 58±1.5 years) with post-pericardiotomy syndrome developed after CABG in the postoperative period. The diagnosis of COPD (moderate severity according to the GOLD classification) was established at the preoperative stage in 36 (47.4%) patients. Dynamic ultrasound of the pleural cavity and pericardium, standard clinical, laboratory studies, clinical manifestations, spirometry were performed once.

## Results

In all cases post-pericardiotomy syndrome is diagnosed at the stage of inpatient treatment. In 16 (21%) cases, a combination of effusion in the pericardium and pleural cavities was found; 49 (64.5%) patients experienced effusion in the pleural cavity, and in the remaining cases - pericardial effusion (14.5%). Clinical manifestations of postpericardiotomy syndrome: in 20 (26.3%) patients, fever; noise of friction of the pericardium - in 7 (9.2%), pleural friction noise - in 12 (15.8%); dyspnea worried 44 (57.9%) patients, thoracic and / or cardialgia - 30 (39.5%). Non-steroidal anti-inflammatory drugs and antibiotics were administered; the duration of treatment was selected individually according to the results of clinical, instrumental and laboratory studies. Patients with COPD also received standard

basal therapy. In cases without concomitant COPD, the regression of manifestations of postpericardiotomy syndrome (complaints, clinical manifestations, indices of instrumental studies) was recorded in significantly shorter periods in comparison with the group of patients with COPD (mean terms were respectively  $8 \pm 2.5$  and  $28 \pm 3.5$  days). And in most cases, subjective manifestations did not correlate with ultrasound data.

## Conclusion

Thus, there was no direct relationship between the course of COPD and the frequency of development of PTCA. However, a longer period of postpericardiotomy syndrome was revealed in patients with COPD confirmed by clinical and instrumental data. In connection with this, it is probably due to the presence of systemic inflammation in patients of this category, which is one of the key moments in the pathogenesis of COPD. In connection with this, in this category of patients with a protracted course of postpericardiotomy syndrome, active detection of COPD is necessary. In the presence of established COPD - to reconsider the severity of this pathology and accordingly to adjust the basal therapy. The erosion of the course of postpericardiotomy syndrome confirms the determining role of ultrasound in the dynamic control of the manifestations of postpericardiotomy syndrome at the outpatient stage.

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## Conflicts of interest

The authors state that there is no conflict of interest.

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