

Abstract

Introduction: Chronic thromboembolic pulmonary hypertension (CTEPH) is a relatively common long-term complication of acute pulmonary embolism (PE) with severely negative impact on the patient's quality of life and prognosis. Specific pharmacotherapy and especially mastery of pulmonary endarterectomy (PEA) offer to our patients a hope for eventual full recovery. Early diagnosis determination is crucial.

Objective: The aim of our prospective study was to determinate CTEPH incidence in a population of patients after acute pulmonary embolism as the first venous thromboembolic event in the patient's history, to assess morphological changes in the pulmonary vascular bed with regard to risk of CTEPH development and try to identify some risk factors of CTEPH development.

Methods: 120 consecutive patients with acute PE were followed-up for 2 years. On admission patients underwent CT pulmonary angiography (CTA), echocardiography and troponin-T, NT-proBNP and D-dimer assesment. At the time of hospital discharge we performed echocardiography and biomarkers reassesment whether they were elevated initially. After 6 months patients underwent pulmonary CTA, echocardiography and during 12- and 24-months visits echocardiography was performed again. In case of pulmonary hypertension detection CTEPH was confirmed or ruled out.

Results: Patients with persisting pulmonary hypertension at the time of hospital discharge can be identified for an effective follow-up based on persisting elevation of NT-proBNP. Morphological abnormalities corresponding to thrombi residua or pulmonary hypertension on pulmonary CTA 6 months after PE were found in 68 % of patients. To quantify individual totality of abnormalities the CT-score was constructed. CTEPR-index value ≥ 4 equates to a twelve-fold higher risk of CTEPH development ($p=0.013$) with sensitivity 0.80 (95 % CI 0.31; 0.989) and specificity 0.79 (95 % CI 0.754; 0.799). The CTEPH incidence in our study population was 4,2 %. No additional risk factor among history, clinical, laboratory or echocardiographic data was identified.

Conclusion: About 4.2 % of patients after first symptomatic pulmonary embolism are in risk of CTEPH development. Selection of patients for an effective follow-up is possible based on persisting elevation of NT-proBNP at the time of hospital discharge. It is necessary to search also previous pulmonary embolism residua if pulmonary CTA is performed during dyspnoea differential diagnosis. Description and quantification of them may provide useful information for a clinician and shorten the time to diagnosis determination.