

Low-Dose Digital Fluorography for Diagnosis of Chronic Obstructive Pulmonary Disease Exacerbation in Young Age Patients

N. A. Gorbunov*, A. P. Dergilev, V. I. Kochura, T. V. Mikhaylova

Novosibirsk State Medical University, Ministry of Healthcare of Russia,
Department of Diagnostic Radiology

Abstract

Timely diagnostics of chronic obstructive pulmonary disease (COPD) exacerbations has essential impact on the further course of a disease. The aim of research was to determine the diagnostic opportunities of the low-dose chest digital fluorography (LDFG) technique in young age patients with COPD exacerbation. The young age 45 patients with clinically established diagnose of COPD exacerbation of easy, average and heavy severity were examined. The mean age of the patients was $42,5 \pm 1,3$ years old (from 36 till 45 years old), forced expiration volume for the first second (FEV1) was $68,24 \pm 17,35$ %. The control group comprised 14 healthy people till 45 years old whom annually screening fluorographic examination of the chest was carried out. All patients for low-dose chest digital fluorography in frontal and lateral projections were undergone. Typical X-ray signs of COPD exacerbation of average and heavy severity were determined: increasing of pulmonary field's transparency, increasing and deformation of pulmonary pattern (with its weakening in some cases), low location of diaphragm domes, change of heart shadow configuration, extension of retrosternal space. Mean values of inspiration and expiration pulmonary electron-optical density by means of low-dose chest digital fluorography in young age patients with COPD exacerbation of easy, average and heavy severity were established. Mean values of inspiration and expiration pulmonary electron-optical density were minimum in group of young age patients with average severity of COPD exacerbation ($646,2 \pm 4,94$; $p < 0,01$ и $677,34 \pm 9,91$; $p < 0,05$), and were maximum – in young age patients with heavy severity of COPD exacerbation ($765,93 \pm 16,4$; $p < 0,05$ и $826,8 \pm 11,64$; $p < 0,05$). For diagnosis verification and exception of the same syndrome pulmonary diseases for patients with COPD exacerbation of easy, average and heavy severity the high resolution computer tomography (HRCT) with the subsequent determination of inspiration and expiration pulmonary density was carried out. It was established that pulmonary electron-optical density indices allow to optimize the results of low-dose chest digital fluorography in young age patients with COPD exacerbation of easy, average and heavy severity.

Key words: Low-Dose Digital Fluorography, Exacerbation of COPD in Young Age Patients, Pulmonary Electron-Optical Density, Inspiration-Expiration HRCT.

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Authors

Gorbunov Nikolay Alekseevich, Ph. D. Med., Associate Professor of Department of Diagnostic Radiology of Novosibirsk State Medical University, Ministry of Healthcare of Russia.
Address: Krasniy prospekt, 52, Novosibirsk, 630091, Russia.
Phone number: +7 (383) 346-01-47. E-mail: n_gorbunov@ngs.ru

Dergilev Aleksandr Petrovich, M. D. Med., Professor, Head of Department of Diagnostic Radiology of Novosibirsk State Medical University, Ministry of Healthcare of Russia, Chief specialist in Diagnostic Radiology, Ministry of Healthcare of Novosibirsk Region.
Address: Krasniy prospekt, 52, Novosibirsk, 630091, Russia.
Phone number: +7 (383) 346-01-47. E-mail: a.dergilev@mail.ru

Kochura Viktor Ivanovich, Ph. D. Med., Assistant of Department of Diagnostic Radiology of Novosibirsk State Medical University, Ministry of Healthcare of Russia.
Address: Krasniy prospekt, 52, Novosibirsk, 630091, Russia.
Phone number: +7 (383) 346-01-47. E-mail: kvi@oblmed.nsk.ru

Mikhaylova Tat'yana Vasil'evna, Ph. D. Med., Associate Professor of Department of Diagnostic Radiology of Novosibirsk State Medical University, Ministry of Healthcare of Russia.
Address: Krasniy prospekt, 52, Novosibirsk, 630091, Russia.
Phone number: +7 (383) 346-01-47. E-mail: zsustav@mail.ru