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**Title:** MDCT and MRI DWI early signs of COPD

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**Body:** Cigarette smoking is the leading cause of COPD. Most people who have COPD smoke or used to smoke some form of tobacco. But nonsmokers can develop COPD also. Purpose: the main aim is to find early MDCT or MRI sings of COPD in young population of smokers, before developing the first clinical symptoms. Material and methods: we examined 5863 patients from 18 to 35 years old. 3101 were male, 2762 female. All patients were examined on 16 or 64 MDCT using all advanced methods like virtual bronchoscopy, emphysema software we created, histogram, huge variation of filters and MDCT pulmonary angiography and MDCT perfusion. Patients with signs of COPD were examined by 1.5T MRI with DWI. Results: patients were examined by MDCT because of different reasons, some of them because of acute respiratory symptoms, mostly influenza but also group of patients voluntarily screened for lung cancer. We find signs of early COPD in 603 (10.28%) patients. All patients with signs of any other chronic disease or lung cancer were not matter of this study. Also we did not use patients with history of hemoptysis, even small one. In patients were we find signs suspect for COPD we performed MDCT pulmonary angiography to find any signs of vascular abnormality witch could mislead us. MRI with DWI was performed to determine small vessels. In all patients we find areas of lower density then lung parenchyma. All areas were in peripheral parts of the lung, on left side of the lung in 61%. We also had control examination after two years in 6 patients, in all patient areas of emphysema were bigger. Conclusion: Signs of COPD can be found earlier than first symptoms are visible. MDCT with variety of tools and MRI with DWI are very useful for early diagnosis.