Chest computed tomography (CT) scan features of chronic pulmonary aspergillosis

Nikolaeva NG, Shadrivova OV, Klimko NN
I. Mechnikov North Western State Medical University, Saint-Petersburg, Russia

Objectives
The improvement of CT scan diagnostic of chronic pulmonary aspergillosis (CPA).

Materials and methods
In the prospective study were included 62 patients with CPA. In the control group were included 39 patients with suspected CPA without laboratory and serological confirmation of CPA diagnosis. CT scanning was performed by Toshiba Aquillion 64-slices CT with a cut-off thickness of 0.9 mm, pitch 1, voltage to the 120kV tube with field of view (FOV) and construction of multiplanar reconstructions, projections with maximum and minimum intensities (MIP, MinIP). The ECM/M/ESCMID/ERS 2016 criteria were used for the diagnosis of CPA.

Results
CPA was confirmed in 62 patients, median age – 60 years (17 – 81), males – 43%. In the control group were 39 patients with median age 53 years (24 – 72), males – 34%.

Underlying diseases in CPA patients were tuberculosis – 28%, CODP, bronchial asthma, or bronchiectasis – 37%, emphysema – 12%, sarcoiosis – 10%, destructive pneumonia – 8%, non-tuberculosis mycobacteriosis – 3%, idiopathic pulmonary fibrosis - 2%.

The main underlying diseases in control group patients were: chronic obstructive pulmonary disease, bronchial asthma, chronic bronchitis – 39%, bronchiectasis – 15%, bronchopneumonia post-inflammatory lesions – 12%, emphysema – 9%, post-tuberculous changes, non-tuberculous mycobacteriosis – 6%, sarcoiosis – 6%, cystic fibrosis – 5% Wegener’s granulomatosis – 4%, lung adenocarcinoma, secondary focal changes – 4%.

Focal lesions in lungs were identified in 24% vs 30% patients, diffuse changes - 14% vs 17%. Bilateral lung lesions were revealed in 31% vs 17% cases, and unilateral changes – 30% vs 20%. Bronchiectasis were determined in 26% vs 14% patients.

The “air-crescent” sign (Fig. 1) was revealed in 61% vs 3% (p=0.00004) patients, pleural thickening – 53% vs 3% (p=0.0002) (Fig. 1.2)

Clinical-radiological forms of CPA were single aspergilloma – 30%, aspergillus nodule(s) – 33%, cavitary aspergillosis - 24%, and fibrosing aspergillosis - 13% (Fig. 3).

Conclusion
The “air-crescent” sign was revealed in 61% of CPA patients, pleural thickening – 53%. Single aspergilloma was in 30% patients with CPA, aspergillus nodule(s) – 33%, cavitary aspergillosis – 24%, and fibrosing aspergillosis – 13%.