114 The incidence of pulmonary aspergillosis in patients with cystic fibrosis in Russian Federation

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Background

In patients with cystic fibrosis (CF), the diagnosis of pulmonary aspergillosis is difficult due to non-specific clinical and radiological manifestations. Currently, data on the incidence of various pulmonary aspergillosis forms in CF patients are limited and inconclusive.

Objectives

To assess the incidence of various forms of pulmonary aspergillosis in patients with cystic fibrosis in Russian Federation.

Materials and methods

During 2014-2017 in the prospective study were included 190 patients with cystic fibrosis. The median age was 14 years (range 1 - 37), children – 68.5%, males – 50.5%. The serum total IgE (tIgE) and specific IgE(sIgE) to 6 fungal allergens (*Aspergillus, Alternaria Cladosporium, Penicillium, Rhizopus, Candida*, Alkor Bio, Saint Petersburg, Russia) determination and mycology (microscopy and culture of sputum or bronchoalveolar lavage - BAL) tests were performed in all patients. Chest computed tomography scans were performed according to the indications. For the allergic bronchopulmonary aspergillosis (ABPA), chronic pulmonary aspergillosis (CPA), and invasive aspergillosis (IA) diagnosis criteria of Stevens et al., 2003, Denning et al, 2016, and EORTC/MSG, 2008 were used respectively.

Results

Aspergillus spp. from sputum or BAL were cultured in 36 (19%) CF patients: *A. fumigatus* – 18% (n=34). Two or more *Aspergillus* spp. were detected in 8.4% of CF patients (fig. 1).

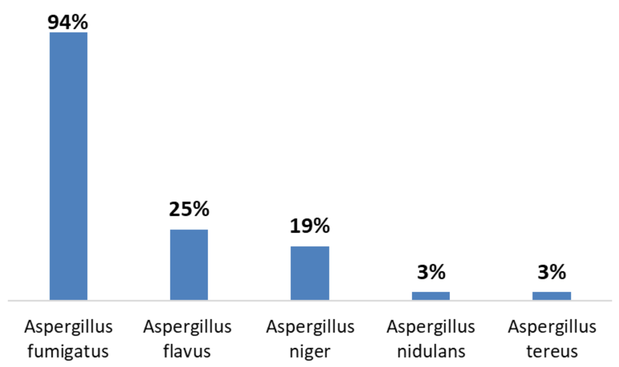

Fig.1. Prevalence culture positive for *Aspergillus* spp. (n=36)

The incidence of sensitization to fungi in CF patients by positive results of skin prick tests and/or detection of specific IgE to allergens of mold fungi in serum was 57% (fig.2). Hypersensitivity to *Aspergillus* spp. was detected in 51 patients (27%)

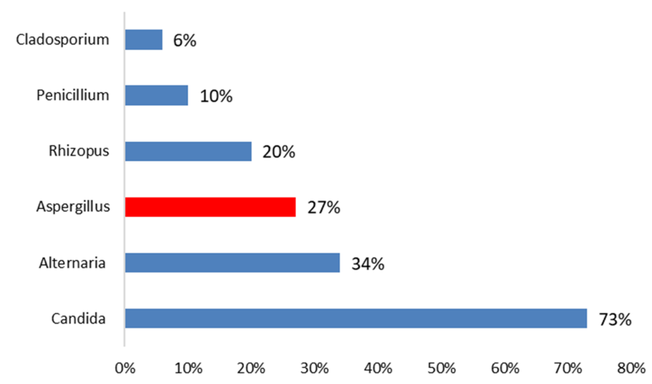

Fig.2. Fungal sensitization in CF patients

The total IgE level varied from 1 to 3861 (Me 15.0 (7 ÷ 87) IU/ml) in CF patients. In 10 (5.3%) patients it exceeded proposed by experts threshold level of 500 IU/ml. ABPA was diagnosed in 11 CF patients (5.7%), 4 children and 7 adults.

Results

The minimum patient's age of ABPA diagnosis was 8 years, while the maximum age was 29 years.

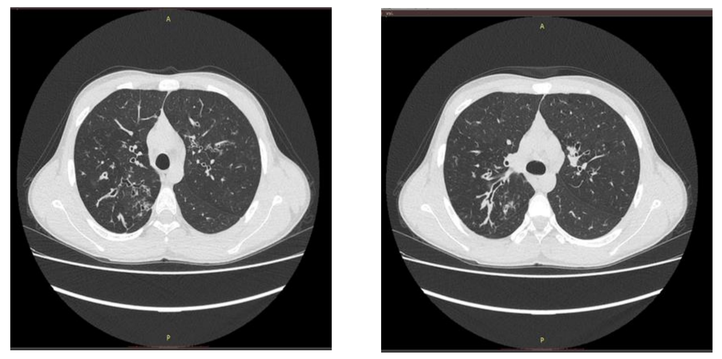

Fig.3. CT scans of patients with allergic bronchopulmonary aspergillosis

The incidence of CPA was 4.2%, and IA developed in one patient (0.5%) after liver transplantation and immunosuppressive therapy.

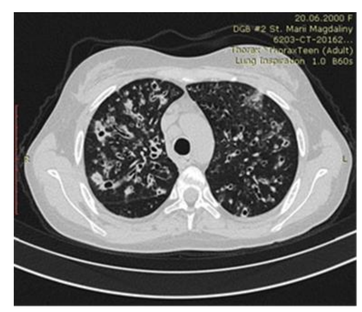

Fig.4. Chronic pulmonary aspergillosis

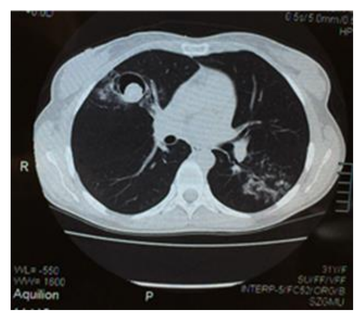

Fig.5. Single aspergilloma

Conclusions

In patients with cystic fibrosis the incidence of pulmonary aspergillosis was 10.4%: allergic bronchopulmonary aspergillosis – 5.7%, chronic pulmonary aspergillosis – 4.2%, and invasive aspergillosis – 0.5%. All patients with cystic fibrosis need a screening tests to identify different forms of pulmonary aspergillosis.