P0368
Paper Poster Session
Fungal infection epidemiology

Impact of fungal presence in the air on development of fungal rhinosinusitis

Aleksandra Barac*[1], Marina Pekmezovic[1], Vesna Tomic Spiric[2], Zoran Rakocevic[3], Arunaloke Chakrabarti[4]

[1]*Institute for Microbiology and Immunology, Faculty of Medicine, University of Belgrade, National Reference Laboratory for Medical Mycology, Belgrade, Serbia*

[2]*Clinic for Allergology and Clinical Immunology, Clinical Centre of Serbia , Belgrade, Serbia, Serbia*

[3]*Faculty of Dentistry, University of Belgrade, Belgrade, Serbia*

[4]*Center of Advance Research in Medical Mycology, Who Collaborating Center for Reference & Research of Fungi of Medical Importance; Postgraduate Institute of Medical Education & Research, Chandigarh, India*

Background: Although pathogenesis of fungal rhinosinusitis (FRS) has been widely investigated, the relationship of the mycobiome of sinonasal mucosa, immune response on fungal presence in environment and development of FRS is not yet revealed. The aim of our study was to evaluate the relationship between the presence of fungi on sinonasal mucosa with their presence in the air of patient‘s homes and patient‘s clinical and allergological characteristics.

Material/methods: The prospective study with 136 patients with chronic rhinosinustis/CRS was conducted in the National Reference Medical Mycology Laboratory, Faculty of Medicine, University of Belgrade. Patients were divided into two groups depending on the class of molds mix specific IgE antibodies (Ab) in sera. Patients with molds mix specific IgE Ab classes 1-6 belonged to the group sIgE+, while patients with molds mix specific IgE Ab class 0 belonged to the group sIgE-. After mycological analyses, patients were divided in two groups (1) patients with positive sIgE and positive fungal finding (AFRS group) and (2) patients with negative sIgE and positive fungal finding (FRS group). Study design included: 1) anamnesis data; 2) measurements of molds specific IgE/sIgE and total IgE Ab, absolute eosinophile/Eo count and skin prick test; 3) rhinologic and CT observation; 4) mycological finding of sinonasal nasal aspirate and 5) air sampling from the patient’s bedroom.

Results: (i) Patients from sIgE+ group (30.4%) had more often repeated functional endoscopic surgery of sinuses (p=0.005), presence of NP (p=0.025) and more severe forms of CRS; (ii) 46.4% of patients from sIgE+ group had positive fungal finding on nasal mucosa and could be considered as AFRS; (iii) prevalence of AFRS in Serbia is 1.3%, while prevalence of FRS is 2.8%; (iv) patients with AFRS had statistically more frequent asthma (p=0.024) and chronicity of CRS more than 10 years (p=0.000) (v) out of all fungal isolates (n=225) from air samples obtained from homes of patients with CRS, 41 fungi was isolated from home samples (HS) of AFRS patients, 24 from HS of FRS and 159 from HS of non-FRS patients with the most common species *A. niger* (57%) and *Penicillium* sp.(26%).

Conclusions: This is the first study which analyzes association of fungal finding in inducted sinonasal flow and aspirate from sinuses of patients with FRS, with clinical and allergological findings, as well as with air sample from patients home. Huge amount of fungal spore in the air of patient’s living area should be threat for development of FRS in predisposing patients, especially dose with prolonged CRS

and recalcitrant NP. Next studies should clarify the mechanism by which airborne fungi turn from ‘normal flora’ into triggers of immunological reactions, resulting in FRS.