

Editorial

Warning to pay more attention to fungal allergic asthma in children

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Asthma is a global problem that affects over 300 million people worldwide. The main causes of asthma are allergy and atopy. Asthmatic patients are sensitized to allergens that can result to asthmatic attacks. Fungi as an allergen can sensitize atopic people and present a severe asthmatic attack. Fungi have been found in water-damaged homes of asthmatic patients. Allergic asthma is associated with exposure to fungal contamination from building where fungal exposure is both outside and indoors. This sensitization could be associated with increased asthmatic severity, reduced lung function, morbidity and mortality of patients, especially in pediatric asthmatic forms. Fungal fragments and spores could be found indoors, they originate from the fungi present outdoors. Most fungi possess diverse allergens and are metabolic products secreted outside the organism or cytoplasmic and structural components released on lysis of the fungi. Sporulation is largely determined by temperature, humidity, and moisture. So, seasonal fluctuations and geographic region play a major role in the determination of sporulation (Garcia *et al.*, 2015; Pourpak *et al.* 2008).

Warm and damp conditions in buildings can

usually cause the growth of fungi and the spores may trigger asthma. Fungal sensitization contributes to the persistent severity symptoms of asthma. Therefore, the limitations of growth of the indoor mold and exposure should be inhibited for asthmatic patients. Changing of conditions or eradicating fungi is also necessary. Fungicides might be useful in these conditions and could inhibit fungal growth but these compounds may increase the risk of developing atopic asthma if ever exposed to fungicides. Fungal colonization in the respiratory tract is another problem that could decrease inhalation rate in the absence of an allergic component. Fungi produce mycotoxins as secondary metabolites; these may also have effect on patients with asthma and could be harmful for the respiratory tract. These infections are associated with significant morbidity and mortality (Sahlberg *et al.*, 2009; Pourfathollah *et al.* 2014). The diagnosis of allergic asthma with fungal infections is based on clinical and immunologic reactivity. This is required for: 1. deterioration of lung function, 2. immediate skin test reactivity, 3. total serum {IgE level}, 4. increased specific IgE and IgG antibodies, and 5. chest radiographic infiltrates. Additional, peripheral blood eosinophilia,

spirometry, PCR for detecting fungi species in sputum might be useful (Pourfathollah *et al.*, 2014; Kloek *et al.*, 2010).

A few new antifungal drugs have been introduced. Some of these are chemical agents and some are monoclonal antibodies which can block some disease pathway. There are three classes of systemic antifungals: 1. the polyene macrolides, 2. the azoles and 3. the allylamines. In fungi allergic asthma, these could be useful in curing the infection and controlling asthma. Dwelling places and buildings should therefore be cleaned of the causative organisms (building sickness) and provide an allergen free (especially from fungi and their metabolic products) place for asthmatic children. At least, correct life location, removing the source of fungal spores, preventing fungal growth, the use of fungicides, fast and convenient treatment of fungal infections, in addition to proper and suitable ventilation of the house and care of sensitive people are essential.

References

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