CONSIDERATIONS ON THE CLINICAL EVOLUTION OF AN ASPERGILLOSIS CASE IN CHILDREN

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Abstract
Aspergillosis is a group of diseases caused by microorganisms of the genus Aspergillus. Most pediatric cases are caused by Aspergillus fumigatus. Atopic asthma can be precipitated by inhalation of specific spores, leading to an immediate response by IgE and bronchospasm. Allergic bronchopulmonary aspergillosis joins in 7-10% of patients with corticodependent asthma.

The authors present the case of a child diagnosed with asthma, when an infant, with oscillating evolution. Controller therapy is associated with progressively increasing values of eosinophilia, and finally a syndrome “hyper IgE” (values >4000UI). Inflammatory syndrome is strongly positive. Finally, we excluded any autoimmune or neoplastic and infectious etiology and we confirmed allergic bronchopulmonary aspergillosis.

Keywords: Aspergillosis, asthma

Introduction
Aspergillosis is one of the most common causes of exacerbation of asthma. Exposure to colonies of Aspergillus has been described as a factor causing numerous respiratory diseases, including asthma, chronic eosinophilic pneumonia, hypersensitivity pneumonia and bronchopulmonary aspergillosis.1,5 While bronchopulmonary aspergillosis complicates asthma in adults, the association with asthma in children is very rare.3 Atopic asthma can be precipitated by inhalation of specific spores, leading to IgE-mediated response and bronchospasm.

Case report
We report the case of a 3-year-old girl who was diagnosed with asthma and eczema at 1 year of age. At onset, the clinical symptoms present an erythematous-maculo-papular eruption, and dyspepsia. The patient was consulted and admitted to the Hospital for Infectious Diseases and Pneumology “Dr. Victor Babes” in Craiova for 13 days; laboratory findings revealed a 30% eosinophilia and he was recommended bone marrow biopsy, investigation which was refused by his mother who required an examination within the Fundeni Hospital in Bucharest. After performing a bone marrow puncture, the evaluation of the bone marrow aspirate smears showed slightly reduced cellularity for the patient’s age, a left shift in the granulocyte lineage, normal maturation. Some cellular elements showed macrocytosis and cytoplasmic vacuoles, mild eosinophilia. Erythropoietic lineage showed mild hyperplasia, normoblastic, with normal maturation. The megakaryocytes were in normal percentage in all stages of maturation. After smear examination, we did not find atypical cells.

We excluded HIV infection, adovirus, parainfluenza virus, Chlamydia, pneumonias, Mycoplasma pneumoniae, CMV, Epstein Barr virus, Echo virus, hepatitis with virus A, B, C, D. We learned from the patient history about repeated exposure to mold in the family!

Laboratory findings: ALT = 50 U/L, AST = 88 U/L, Iron = 106 μg/dl γGT = 62U/L, LDH = 548 U/L, uric acid = 2.7 mg/dL, Total Calcium=10.4mg / dl

Eosinophils: November 2013-May 2014: 30%, 12%, 8.5%, 6%, 13% (Fig.1.)
Total IgE values: 18 11 2013 > 4000 UI/ml, 02. 12. 2013: 961.6 UI/ml, 05.03. 2014: 324 UI/ml. (Fig. 2.)

IgE Aspergillus fumigatus: 02. 02. 2014: 0.95 kU/L, 18.11.2014: 7.92 kU/L. (Fig. 3.)

Chest X-ray: reticular and micronodular opacities of different size, diffuse contour supra–, para- and infrahilar bilateral. (Fig 4, 5.)

Bronchoscopy: 12.12.2013: muco-purulent secretions very abundant coming from all lobar orifices, predominantly right. The cultures were negative for microbial germs, negative for fungi, with rare lysed neutrophils; eosinophils, crystals Charcot were not noticed, AFB absent.

Given the historical data, the high values of total IgE, IgE to aspergillus value, extensive bilateral infiltrates radiological aspect; one can support the diagnosis of allergic bronchopulmonary aspergillosis.

This was followed by treatment with Ciprofloxacin 200 mg/day, 8 days, Amikacin 180 mg/day 8 days, Voriconazole 9 days, Ventolin inhaler, Flixotide, Singulair, Zantac, Azithromycin orally 3 days, Ophtamezole intranasally. The evolution was slow with progressive diminishing functional respiratory syndrome.
Discussions

Allergic bronchopulmonary aspergillosis pathogenesis involves an allergic reaction to asperillus species. Patients with chronic lung disease (eg, asthma, cystic fibrosis) can retain the secretions aspergillus fumigatus, leading to an immune response that exacerbates respiratory symptoms. A chronic colonization of mucosal fumigatus produces elevated levels of immunoglobulin G (IgG) and immunoglobulin E (IgE), which lead to recurrent bronchospasm.

Allergic bronchopulmonary aspergillosis occurs in 1-2% of patients with asthma.2 The normal levels of total IgE in a patient with active pulmonary disease exclude the diagnosis of allergic bronchopulmonary aspergillosis.4

Serum levels of total and specific IgE are required for the differential diagnosis of allergic bronchopulmonary aspergillosis; the degree of activation correlates with the disease and this is useful to monitor the response to treatment.7 A skin prick test and specific IgE (methods with high sensitivity and specificity) allow early diagnosis of the disease, being associated with a favorable prognosis, thus preventing progression to irreversible lung tissue changes (fibrosis).3,12

Conclusion

Allergic bronchopulmonary aspergillosis is an undervalued disease, the true prevalence of aspergillosis is not known. There is a similarity between the clinical manifestations of allergic bronchopulmonary aspergillosis and asthma with fungal sensitization.9 The correct diagnostic can be difficult but very important for the prognostic.11 The key therapy remains the antifungal treatment whose duration depends on the evolutionary peculiarities of the underlying disease, the stage screening and the variable risk of the bronchial colonization of Aspergillus spores, which requires special measures for prevention in these patients.6,10,13

References

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