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A middle-age non-smoking woman with uncontrolled persistent bronchial asthma

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Abstract

A 51 year-old female was referred to our attention in our outpatient clinic for persistent dyspnea on exertion and cough. Her past medical history was characterized, in the last 7 years, by atopic uncontrolled persistent bronchial asthma and bronchiectasis. The patient was only using a fixed dose combination of inhaled glucocorticoid and long-acting beta2 agonist as needed. The presence of comorbidities that may influence asthma control and the response to the antiasthma drugs were assessed. The patient was educated to using correctly her drug devices and on the fundamental relevance of adhering a regular asthma treatment, according to the medical recommendations. Within one month of regular antiasthma therapy, her asthma was well controlled. Bronchial asthma is a chronic inflammatory disease of the lower airways whose management needs long-term adherence to the prescribed anti-inflammatory therapy. Despite the clinical efficacy of current asthmatherapies, a low level of adherence is a frequent issue in clinical practice. Before defining a patient as affected by severe asthma, it is mandatory to carefully evaluate its long-term adherence to the asthma treatment and to exclude the presence of comorbidities that may cause asthma like-symptoms and/or reduce the efficacy of antiasthma drugs.

Key Words: asthma, comorbidity, severe asthma, differential diagnosis, treatment adherence

Introduction

Bronchial asthma is an heterogeneous disease, usually characterized by chronic airway inflammation, defined by a history of respiratory symptoms as wheeze, shortness of breath, chest tightness and cough that change over time and intensity, together with variable expiratory airflow limitation (1). The primary aim of asthma management is to achieve symptoms control, and to reduce the risk of future exacerbations and of progressive loss of lung function (2). When asthma does not respond to a regular and correct treatment, the non-adherence to medical recommendations and the presence of comorbidities or other diseases mimicking asthma should be carefully investigated (3).

Case Report

A 51 year-old female, Caucasian, lifelong non-smoker, Police officer, was referred to our outpatient clinic, by her family physician, for persistent dyspnea on exertion and cough. Her past medical history was characterized by atopic persistent uncontrolled bronchial asthma and bronchiectasis (diagnosed 7 years before presentation). The patient reported to use only a fixed dose combination of inhaled glucocorticoid and long-acting beta2 agonist (formoterol 4,5 μg/budesonide 160 μg) as needed. Her vital signs were: systemic blood pressure 140/80 mmHg, pulse frequency 69/min rhythmic, body axillary temperature 36,5°C, oxygen saturation value of 96% when breathing room air, with a respiratory rate of 24 breath per minute. Her height was 165 cm with a weight of 90 Kg and a body mass index of 33 Kg/m². Physical examination of the chest revealed the presence of low-pitched wheezes on right basal lung field. No other physical signs outside the chest were pathological. Temporal analysis of the flow-volume curves available from 2014 to 2018 revealed a marked variation of the forced expiratory volume in one second (FEV_1) (Fig. 1). [1.28]

Figure 1.Temporal variation of FEV_1 from 2014 to 2018.
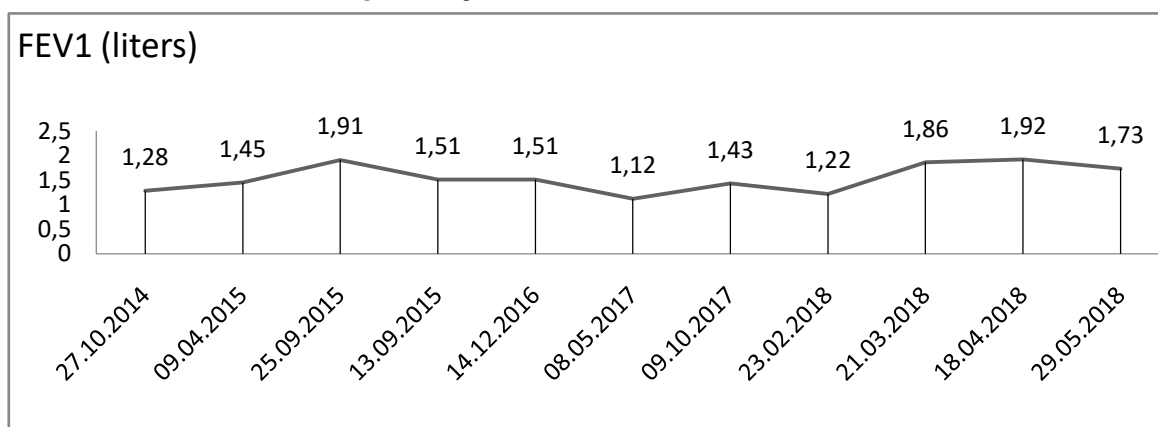
The asthma control test (ACT) was 12 (= poorly controlled asthma). A skin prick test for common aeroallergens was positive to dust mites and parietaria pollen allergens. Serum total level of immunoglobulin (Ig) E was 448 UI/ml (normal value 100-200 UI/ml). Computed tomography (CT) scan of the chest, performed from 2011 to 2018 showed migratory pulmonary opacities and localized bronchiectasis (Figure 2). Serum level of anti-myeloperoxidase auto-antibodies (MPO) was normal [3.2 UA (normal value 0.0-20.0 UA)].

A CT scan of the paranasal sinuses showed an opacity in the right sphenoid sinus suggestive of a "fungus ball" (Figure 3) that was confirmed by an ear, nose and throat consultation.

The polysomnography and the echocardiography were normal. The serum level of IgG and IgE anti-Aspergillus fumigatus were normal.

The patient was educated to use correctly her drug devices and on the fundamental importance of adhering to the medical recommendation on her antiasthma treatment. Then a regular treatment of fixed dose formoterol/budesonide (4,5/160 μg twice daily) and tiotropium (2.5 μg once daily) plus montelukast (10 mg once daily os). After one month of follow-up the patient was asymptomatic (ACT total score of 22= well controlled asthma) and had a significant increase of 640 mL of the FEV_1.

Fig.2 Chest computed tomography scans showing pulmonary migratory opacities and bronchiectasis from 2011 to 2018

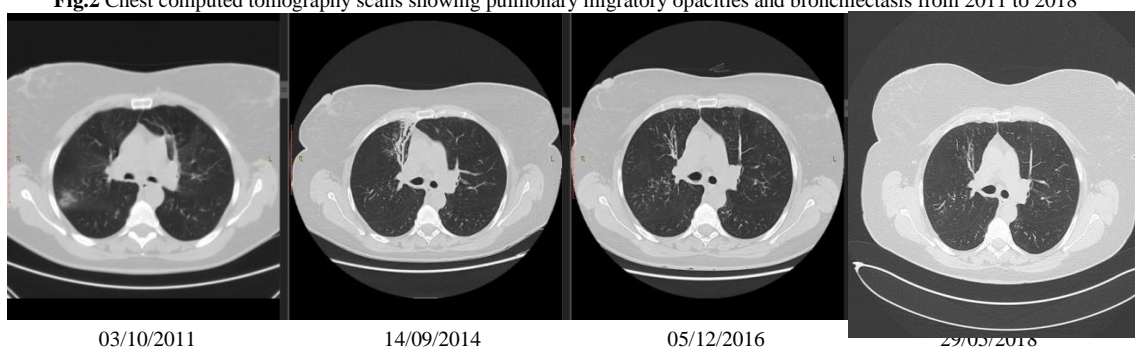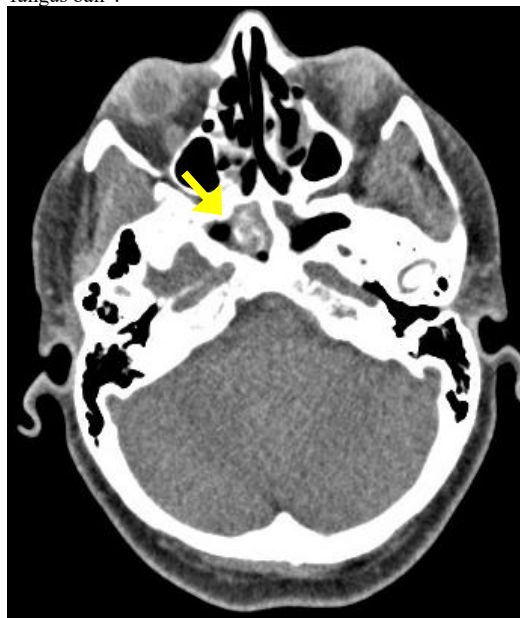03/10/2011   14/09/2014   05/12/2016   29/03/2018

Fig. 3 CT scans of paranasal sinuses showing an opacity in the right sphenoid sinus (yellow arrow) that could be consistent with a "fungus ball".

Discussion

The main clinical questions that every physician must consider before formulating a diagnosis of severe bronchial asthma are summarized in table 1.

Once the diagnosis of asthma has been confirmed, an appropriate antiasthma therapy must

be prescribed based on the indications of current national and international guidelines (1). Long-term adherence to the anti-asthma therapy is fundamental to reach control of asthma, together with patient education to correctly use the drug devices (4-6). It is also mandatory to perform an accurate differential diagnosis with other diseases (summarized in table 2) that may mimicking severe persistent bronchial asthma, causing asthma-like symptoms.

Despite the clinical efficacy of current asthmatherapies, a low level of adherence is a frequent issue in clinical practice. Before defining a patient as affected by severe asthma, it is mandatory to carefully evaluate its long-term adherence to the asthma treatment and to exclude the presence of comorbidities that may cause asthma like-symptoms and/or reduce the efficacy of antiasthma drugs.

Table 1. Main clinical questions that every physician must ask before formulating a diagnosis of severe bronchial asthma

1 Does the patient really have bronchial asthma?
2 Are all the symptoms reported by the patient due to bronchial asthma or are there other comorbidities?
3 Does the patient correctly take all the prescribed therapy?
4 Are there any factor aggravating bronchial asthma and potentially modifiable? • Tobacco smoke • Obesity • Drugs (eg beta-blockers, nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme inhibitors) • Inhalation of aero-allergens to which the patient is sensitized • Occupational triggers

Table 2. Disease most frequently mimicking severe bronchial asthma.

Chronic obstructive pulmonary disease (COPD)
Cardiac Asthma
Vocal cord dysfunction syndrome
Churg Strauss Syndrome
Allergic brochopulmonary aspergillosis (ABPA)
Idiopathic hypereosinophilic syndrome
Inflammatory, malformative and neoplastic disease that cause tracheal stenosis

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