Case Report

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Emphysema in HIV Positive Patient: Diagnostic and Therapeutic Conduct

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Abstract

The increase of cases of patients with chronic obstructive pulmonary disease in HIV positive patients is a reality since the TAAE era. In its beginning, infectious respiratory diseases were the most frequent and prevalent. Different factors were associated to this entity such as the HIV virus itself, antiretroviral treatment, tobacco habit, the use of marijuana, anemia, coinfection with HCV, BMI, nadir and current value of CD4 and viral load. The control of the patient through dyspnea assessment scales and complementary studies such as spirometry, chest CT, 6-minute walk test and carbon dioxide diffusion test have provided tools to contribute to the diagnosis, treatment and prevention of the complications inherent in COPD. Our patient presented a severe respiratory obstruction with FCV less than 70%, FEV1 less than 80%, FEV1/CFV ratio less than 70%, diffusion test less than 80% and central emphysema and paralobulillar CT. Its CD4 values and viral load within normal parameters.

Keywords: HIV; Emphysema; Chronic obstructive pulmonary disease; Tobacco

Introduction

The scientific literature reports a higher incidence of chronic obstructive pulmonary disease (COPD), pulmonary hypertension and lung cancer in HIV positive patients compared to negative ones. It was determined that bacterial pneumonia and COPD are the two most diagnosed pulmonary pathologies [1,2].

Numerous investigations were conducted evaluating lung function in HIV positive patients under ART. In conclusion, an association was suggested between respiratory alterations with advanced age, smoking habit and high viral loads. In turn, it was shown that ARV treatment is an independent predictor of increased airway obstruction [3,4].

Our objective is to communicate a case of a patient with emphysema and HIV positive, its clinical impact correlating with respiratory function tests.

Clinical Case

A 59 year old white male patient diagnosed with HIV positive in 1997, a form of sexual contagion, stage CDC B1. As a history of tobacco dependence of 4 packs/year, diagnosis of pulmonary tuberculosis in 1988, diagnosis of COPD in 2007 and psoriasis in 2009. In ARV treatment 20 years ago, it is currently under treatment with lamivudine, Tenofovir and efavirenz. Good adherence to pharmacological treatment. It does not present co-infections. In treatment for COPD with salmeterol and fluticasone puff. The patient made two unsuccessful attempts to quit smoking. Consultation for exacerbation of dyspnea and cough.

Physical Exam

Lucid patient oriented in time and space. Tachypnea Size: 1.78 cm and weight: 67 Kg. It presents chest in barrel. A pulmonary auscultation decreased vesicular murmur in both pulmonary fields with the presence of isolated rhonchi. Rest of physical examination without alterations.

Complementary Methods

Laboratory

Hemoglobin

13.1 g/dl, C-reactive protein <5, CD4 732 cell/mm^3, 37%, CD8 578 celL/mm^3, 32% and viral load for HIV <34 copies. Nadir of CD4 628 cell/mm^3

Chest x-ray

>10% radiographic emphysema.

Spirometry

Obstructive pattern.

Chest CT

It presents center emphysema and perilobullilar and paraseptal. It was decided to perform a spirometry test again

and supplement it with a 6-minute walking test and CO diffusion.

Spirometry

FVC(L) pre bronchodilator 73% of the theoretical value, and post bronchodilator 91%, below 70%, FEV1(L) 19% pre bronchodilator and 20% post bronchodilator. FEV1/FCV (%) pre bronchodilator 25 and post bronchodilator 21. FEF 25-75% (L/s) pre bronchodilator 7 and post bronchodilator 9.4.

Walk test 6-minutes

Distance traveled 382 meters for a theoretical 572 m, slow but continuous march.

Borg scale

5 severe.

CO diffusion

DLCO (ml/min/mm Hg) 57%, VA (L) 103, DL/VA (ml/min/mm Hg/l) 44.

The interpretation of the studies tells us that according to the FVC, the FEV1, the FEV1/FVC ratio and the FEF 25-75% are reduced, which indicates airway obstruction. The FVC is reduced in relation to SVC, which indicates air blockage. After administration of bronchodilators, there is a significant response indicated by elevated FVC. The reduced diffusion capacity indicates a moderate degree of loss of alveolar capillary surface functions. It is interpreted as a very severe obstructive pathology of the respiratory tract.

Results and Discussion

In our study, the patient had a FCV lower than 70% PB, with a severe decrease in FEV1 of less than 80% and a FEV1/FCV ratio of less than 70%; the carbon dioxide diffusion test was lower than expected (80%), and on account of the 6-minute walk, a clear decrease in the theoretical value. Tomographically affected pulmonary parenchyma to a severe degree. His symptoms reflect the deterioration of his respiratory health.

According to projections, chronic obstructive pulmonary disease will become the third cause of death by 2030, early detection and adequate management is a priority to improve the diagnosis and quality of life of patients [5].

Sampériz et al [3] observed the presence of airflow limitation, decreased air diffusion capacity, finding smoking and previous TB infection as the main risk factors, as found in our case.

In his work Triplette [6] presents the results found in HIV+ patients, with radiographic emphysema >10% where it was associated with an increase in respiratory symptoms such as chronic cough and/or phlegm, as well as a decrease in walking test of 6-minute, this finding is similar in our patient who consults for exacerbation of his dyspnea and cough and in the walk test of 6-minutes the amount of meters travelled by less than the theoretical value in more than 60 meters as recorded in the literature and according to the Borg scale reached its highest level.

A relevant piece of information that emerges from the recently published work of Lambert and Crother [7] reveals the association between airflow obstruction, moderate to severe decrease in carbon dioxide diffusion and an increase in mortality causes in people with HIV and COPD. The mentioned causes are cardiovascular pathologies, liver disease and neoplasms not associated with AIDS. Our patient presents a decrease in diffusion capacity, which places him in a situation of risk in front of these pathologies.

However, Ronit et al. [8] in their recent work concludes that HIV is a risk factor for a concurrent decrease in FEV1 and FVC and this increased risk is not explained by smoking or socioeconomic status and may be mediated by previous immunodeficiency. This conclusion in relation to smoking is opposed to our work.

HIV in the era of antiretroviral therapy is characterized by the multimorbidity and frequent occurrence of chronic health conditions unrelated to HIV. Respiratory symptoms and chronic lung diseases, including chronic obstructive pulmonary disease, asthma and cardiopulmonary dysfunction, are among the conditions that can occur in people living with HIV. Tobacco use, which is disproportionately high among people living with HIV, contributes greatly to the risk of lung disease. In addition, the associated and, at times, exclusive characteristics of HIV such as persistent inflammation, activation of immune cells, oxidative stress may contribute to its pathogenesis [9].

Conclusion

Our patient has an increased risk of suffering from cardiovascular, hepatic and neoplastic co-morbidities according to their result by functional tests. It is essential to emphasize the cessation of smoking, continue accompanying achieve 100% adherence and systematically control your respiratory symptoms in order to provide quality of life.

Conflict of Interests

The authors declare no conflict of interest.

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