Bronchiolitis obliterans organizing pneumonia and Crohn’s disease

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INTRODUCTION

Extraintestinal manifestations in inflammatory bowel disease (IBD) have been described in almost every organ system. Their incidence rate fluctuates between 21 and 41% (1), and their frequency increases in connection with length of disease, being more frequent in Crohn’s disease (2-4).

Pulmonary manifestations associated with IBD were first described by Kraft et al. (5), in 1976, in six patients with chronic bronchial suppuration. Since then, a number of patients with respiratory disease have been reported, these being the less frequent extraintestinal manifestation (6), often linked to ulcerative colitis (7). Numerous cases concomitantly present with other extraintestinal manifestations (arthritis, uveitis), which suggests a common pathogenic mechanism (7) that is presently unknown.

CASE REPORT

A 41-year-old male with no toxic habits and lactose intolerance was diagnosed with Crohn’s disease of inflammatory pattern and ileal localization, which had begun with an episode of uveitis two years earlier. Now he is in clinical remission following no maintenance treatment.

He has had an upper respiratory tract infection (common cold) for two months, which progressed to cough
expectoration and fever (38 °C) in the last few days. He was first diagnosed with right basal pneumonia; he was treated with antibiotics and mucolytics but hardly improved. Afterwards he had dyspnea, mucopurulent expectoration, asthenia, and weight loss of 8-10 kg. As he did not get better he was taken to hospital and admitted to the pneumology ward.

Physical examination revealed pale skin, temperature at 37.2 °C, and inspiratory crackle at the right lung base.

— Complementary examinations:
  - Laboratory findings revealed an erythrocyte sedimentation rate of 66 mm/h, white blood cell count of 6,900/ul, hematocrit of 35.6%, and platelets 366,000/ul. Biochemistry showed normal values. Coagulation tests: No significant findings. Oxygen saturation 95%.
  - Blood cultures for aerobes and anaerobes were negative. Serological studies for AIDS were negative. Sputum culture for bacteria was negative. Urine culture for *Legionella pneumophila* and *Pneumococcus* was negative.
  - Chest X-rays at admission showed the presence of bilateral patchy alveolar infiltrates predominantly found in the right lung base; in further chest X-rays these were reported as migratory pulmonary infiltrates in lung segment six affecting the medium right lobe. Some days later, parenchymal consolidation was seen in the upper right lobe with clearing of pulmonary infiltrates in both lung bases.
  - Pulmonary function test results were as follows: Forced vital capacity (FVC): 2.52 L (56% of predicted value), forced expiratory volume in 1 s (FEV₁): 2.23 l (60% of predicted), and MMEF_{25-75}: 1.96 l (46% of predicted), which showed a non-obstructive pattern.
  - A thoracic computed tomography scan showed extensive parenchymal consolidation in the upper right lobe; areas of consolidation in resolution and loss of volume in the medium right lobe; consolidation in partial resolution in the lower right lobe, with alveolar infiltrates, and partial clearing in the back segment of the upper left lobe (Fig. 1).
  - After these results fiberoptic bronchoscopies with bronchoalveolar lavage and transbronchial biopsy were done: No lumen or mucosa injuries were found. Bacteriological studies of the bronchial lavage were negative for *Legionella*, acid-fast bacilli, and fungi. Cytology studies of the bronchial lavage: 80 cell/mm, 65% macrophages, 25% lymphocytes (increased), 5% eosinophils, and 5% polymorphonuclears. CD4/CD8 ratio: 0.87. A histological examination of the transbronchial biopsy showed alveolar wall thickening, chronic inflammation, and fibrosis; hyperplasia of alveolar cells with cellular desquamation and granular PAS-negative exudate; granulation tissue filling the lumen of terminal bronchioles. No granuloma formation or hyalin membranes. All the above is compatible with bronchiolitis obliterans organizing pneumonia.

The patient was treated with prednisone doses of 1 mg/kg/day, which managed to reduce temperature and improve the remaining symptoms. Three months later the patient shows no symptoms and chest X-rays are normal.

**DISCUSSION**

Respiratory manifestations vary from subclinical pulmonary findings to airway disorders, and obstructive and interstitial lung diseases, which in some cases may result in extremely serious situations (7,8) and that sometimes can present several years after bowel disease onset (9) (Table I).

It is important to know that respiratory diseases may be caused by drugs used to treat IBD (sulfasalazine, mesalamine, infliximab, methotrexate), as they usually improve after medication discontinuation, and in some cases respond to steroid therapy (7).

**Table I. Pulmonary manifestations in inflammatory bowel disease patients**

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Fig. 1. CT scan showing parenchymal consolidation in the lung.
Lung parenchyma diseases include bronchiolitis obliterans organizing pneumonia (BOOP), which usually presents with fever, cough, and sometimes chest pain (6). BOOP is an infrequent lung disease characterized by the presence of polyps made up of granulation tissue inside the alveoli, alveolar ducts, and bronchioles, representing a focal organizing pneumonia (10). High resolution computed axial tomography (HRCT) is the chosen test for the diagnosis of diffuse interstitial lung disease, and even though there are no specific radiological patterns in BOOP, HRCT helps in the diagnosis. The patterns most frequently found are parenchymal consolidation and ground-glass opacity (10).

Camus et al. (11) published a series of 33 patients with IBD and lung manifestations in 1993, of which over 80% had ulcerative colitis. They described 6 patients who had BOOP, of whom only one had Crohn’s disease. The most common symptoms were fever, dyspnea, cough, and chest pain. A history of upper respiratory tract infection was observed in one of them, as in our patient. All of them had a normal fiberoptic bronchoscopy, and the diagnosis was made after a histological study of lung tissue.

Ten years later, in 2003, Storch et al. (7) went through over 400 cases of IBD and lung manifestations, of whom 150 had active pulmonary disease and the remaining subclinical manifestations. They described the different patterns of pulmonary disease. They studied both disease-related patterns and drugs used for IBD treatment. Out of all 400 cases studied, they found 9 BOOP cases, 8 of which had ulcerative colitis. Average age was 27. The most common symptoms were dyspnea and cough. The diagnosis was reached by transbronchial biopsy, and all responded well to steroid treatment, just as in our case.

BOOP is an interstitial respiratory disease that may develop in IBD patients. In our case, with no maintenance drug therapy, it can be considered an extraintestinal manifestation developing independently from bowel disease, which responded to corticoid treatment.

We deem it important that pulmonary manifestations be borne in mind, both secondary to drug treatment (5-ASA, infliximab, methotrexate) and disease-associated forms, for early diagnosis and treatment.

REFERENCES