Case Report

Pseudomembranous necrotizing bronchial aspergillosis in a renal transplant recipient

Abdullah Sayıner1, Seyhun Kürşat2, Hüseyin Töz2, Soner Duman2, Binnur Önal3 and Emel Tumbay4

1 Department of Chest Diseases, 2 Division of Nephrology, Department of Internal Medicine, 3 Department of Pathology, 4 Department of Microbiology and Clinical Microbiology, Ege University Medical School, Izmir, Turkey

Key words: Aspergillosis; Aspergillus flavus; pseudomembranous bronchitis; pseudomembranous necrotizing bronchial aspergillosis; renal transplantation; tracheobronchitis

Introduction

Aspergillus infection involves primarily the lungs and the central nervous system in renal transplant recipients. Although it occurs in less than 5% of these cases, it is an important cause of mortality [1].

Tracheobronchial aspergillosis has been described as a distinct clinical entity [2,3] and has mainly been observed in lung transplant recipients, patients with AIDS, lymphoma, and hematologic malignancies. Tracheobronchitis with pseudomembrane formation, now termed as pseudomembranous necrotizing bronchial aspergillosis (PNBA) is an uncommon but lethal form of this disease. Nineteen cases with this variant of tracheobronchial involvement have been described in the literature. To date, there has not been any report of this disease developing in a renal transplant recipient.

Case

A 38-year-old renal transplant recipient in his sixth post-transplant year presented with high fever (39.1°C) and a mild, non-productive cough. He had had an unremarkable clinical course with normal renal function following transplantation and had been on standard immunosuppressive therapy with cyclosporine, azathioprine, and prednisolone. His physical examination, his chest X-ray and complete blood count and blood chemistry were normal. Multiple cultures of blood, urine, stool, and throat swab were all negative. The patient did not respond to an empiric course of amoxicillin + clavulanic acid. A second radiogram obtained ten days after his admission showed a single nodular infiltrate in the right upper zone and a somewhat enlarged left hilum (Figure 1). Bronchoscopy was performed on day 11 in order to obtain specimens for microbiological examination. Raised, cream-colored membranous plaques were observed to cover the bronchial mucosa in the distal trachea, the apical segment of the right upper lobe, and the distal half of the left mainstem bronchus extending to both lobar bronchi. Microbiologic and pathologic examination revealed Aspergillus flavus growing in the mucosa. No other pathogen nor any evidence of any other disease were found. Itraconazole 400 mg/day was started as it is an important cause of mortality [1]. Amphotericin B was not commercially available at the time. Despite therapy, the patient’s clinical condition deteriorated, his fever continued and his follow-up radiograms showed progressively enlarging opacities in the right upper zone and in the left hilar region. An air crescent was apparent around the opacity in the left hilar area on the radiogram obtained on day 25. He thereafter started to develop respiratory failure, which became progressively worse (PaO2: 46.7 mmHg and PaCO2: 33.8 mmHg on day 32), for which he was intubated and mechanically ventilated. A second bronchoscopy showed no progression in the endobronchial involvement. Despite aggressive supportive care, he

Fig. 1. Chest radiogram showing a small nodular infiltrate in the right upper zone and an enlarged left hilum.

Correspondence and offprint requests to: Dr. Abdullah Sayıner, Ege Üniversitesi Tıp Fakültesi, Gögüs Hast. A.D., Bornova, Izmir 35100, Turkey.

© 1999 European Renal Association–European Dialysis and Transplant Association
died on the thirty-fourth hospital day. The family did not accept a post-mortem examination.

Discussion

Tracheobronchial involvement in Aspergillus infection is uncommon. Different terms have been used in the literature to describe this pattern of endobronchial involvement and they are usually aimed at emphasizing the distinct pathologic appearances. A classification has been proposed by Denning et al. [2,3] in order to unify the terminology. The three disease entities; Aspergillus bronchitis, ulcerative Aspergillus bronchitis and pseudomembranous Aspergillus tracheobronchitis, or PNBA, are argued to be different forms of presentation, depending mainly on the level of immunosuppression, or different phases in the progressive evolution of invasive bronchial aspergillosis [3,4]. Apart from these three forms of invasive disease, another condition without extensive inflammation and invasion of the airway wall; namely, obstructing bronchial aspergillosis, has also been described [5].

In a recent review of the literature on Aspergillus tracheobronchitis including all forms of tracheobronchial involvement, it was found that the disease was progressive and fatal in about 40% of the cases [4]. This mortality rate is markedly higher in the subgroup with PNBA, apparently a lethal variant of invasive tracheobronchial aspergillosis. Out of a total of 20 such cases reported in the literature [3,6–16], information on mortality was available for 17, and of these, only one survived (5.9%). Besides, associated parenchymal lung involvement also occurred more frequently in this subgroup (65%) compared with all cases with Aspergillus tracheobronchitis (47%). These differences are in line with the argument that pseudomembrane formation is a more advanced form of tracheobronchial involvement [3,4].

To our knowledge, this is the first report of Aspergillus tracheobronchitis in a renal transplant recipient. This form of the disease was also observed in lung and heart-lung transplant recipients [3,17], but was confined to the transplanted organ, distal to the anastomosis site. Apparently, abolition of the cough reflex and mucociliary transport due to denervation of (Baltimore) 1991; 70:1–14 the lungs, along with airway inflammation resulting from resection episodes or from the suture material at the anastomosis site were the key factors for the development of Aspergillus tracheobronchitis. These factors are not relevant to renal transplant patients, however, and corticosteroid treatment seems to be the only predisposing factor in our case at the time of presentation. He had been followed as an outpatient and no environmental source for Aspergillus could be identified.

In Aspergillus tracheobronchitis, where the disease is confined, at least initially, to the airways with only superficial mucosal invasion, the diagnosis is usually delayed because of non-specific signs and symptoms and lack of radiographic abnormalities. Cases with unilateral wheeze have been reported where this finding was valuable in directing attention to the respiratory tract [6,9]. This is not always the case, though, as in this patient who initially presented with high fever and a mild cough without any other significant physical findings. At the beginning, he did not produce any sputum for culture, but even if he had, this might not have been of value, as sputum cultures are neither sensitive nor specific for Aspergillus infection in the immunocompromised host. It was not until his tenth hospital day that bronchoscopy was performed after observing a new nodular opacity in his right upper zone and the diagnosis was made. In this regard, bronchoscopy seems very useful in these patients, as, apart from providing specimens for microbiological examination, it is the best means of detecting infections with endobronchial manifestations.

References


Received for publication: 21.10.98
Accepted in revised form: 8.3.99