Endobronchial non-Hodgkin’s lymphoma in an AIDS patient

A. EL-SOLH*, K. AMEEN AND S. SHERIF

Pulmonary and Critical Care Division, Department of Medicine, State University of New York at Buffalo, NY, U.S.A.

Introduction

An increase in the incidence of non-Hodgkin’s lymphoma (NHL) among human immunodeficiency virus (HIV) infected persons has been documented in various epidemiological studies (1,2). Widespread disease at the time of diagnosis is considered a characteristic feature of HIV-related lymphomas. This case report describes an acquired immunodeficiency syndrome (AIDS) patient with multiple endobronchial disease secondary to NHL.

Case Report

A 35-year-old HIV positive woman with no prior history of opportunistic infections was admitted with new onset of generalized tonic clonic seizure. The diagnosis of HIV infection was made in 1990, 4 yr prior to this admission. She presumably acquired the HIV infection from heterosexual contact. Her last absolute count of CD4-positive lymphocytes was 10 mm$^{-3}$. In the emergency department, her mental status recovered slowly without obvious residual neurologic deficit. The patient denied any history of illicit drug abuse or suicide attempts. Upon review of system, she admitted to having a non-productive cough for the past 4 weeks, night sweats and low grade fever. She had no haemoptysis, wheezing, or chest pain. She had never smoked and gave no history of travel outside Western New York. She had not been skin-tested recently or received chemoprophylaxis for Pneumocystis carinii pneumonia (PCP) and Mycobacterium avium intracellulare prophylaxis. Her physical examination revealed a well developed female, alert and oriented. Her temperature was 100.2°F, blood pressure was 132/70 mmHg, and pulse rate was 72 beats min$^{-1}$. Funduscopic examination revealed no papilledema and chest examination was unremarkable. There was no evidence of peripheral lymphadenopathy. Her neurologic examination failed to detect any focal deficit. Laboratory data were significant for haemoglobin of 9-6 g dl$^{-1}$, haematocrit of 30-2%, white cell count of 2.7 mm$^{-3}$ and platelet count of 263 mm$^{-3}$. Electrolyte panel, calcium, magnesium and liver function tests were within normal limits. The IgG titer to toxoplasmosis by indirect fluorescent antibody was 128 (normal less than 10). Computed tomographic (CT) scan of the head revealed three nodular densities with rim of contrast enhancement located in the frontoparietal region with slight midline shift to the left. An anteroposterior chest roentgenogram showed a density in the right hilar region with normal surrounding lung fields (Plate 1). Considering the multiplicity of the CNS lesions and the elevated toxoplasma titer, the patient was started empirically on pyrimethamine and clindamycin for presumed CNS toxoplasmosis.

A CT scan of the chest revealed a perihilar infiltrate in the right lung with irregular margin. The left lung was clear. There was no evidence of mediastinal adenopathy or vascular abnormalities (Plate 2). Sputum induced for PCP and sputum smear for acid-fast bacilli were negative on three separate occasions.

Fiberoptic bronchoscopy was performed. A friable constricting lesion was noted in the mid-left main bronchus obscuring the distal airways. The mucosa in the vicinity of the lesion appeared normal. The right upper lobe bronchus was not clearly demarcated due to a large exophytic lesion, richly vascular, that showed comparable characteristics to the lesion seen on the left side. Biopsies from both lesions revealed diffuse, large cell type, malignant lymphoma [International working formula (IWF)] with foci of extensive necrosis (Plate 3). Immunohistochemical
Plate 1 Posteroanterior chest roentgenograms revealing the presence of a right hilar density with normal lung fields.

Plate 2 Chest computed tomographic (CT) scan shows a right hilar density with perihilar infiltrate in the absence of mediastinal adenopathy.

Plate 3 Section of the left endobronchial biopsy showing large lymphocytes with coarse chromatin and inclusion-like macronuclei for B-cell marker.

The patient was referred to Roswell Park Cancer Institute for further evaluation. The patient had a CT of abdomen and pelvis, bone marrow biopsy and a total body gallium imaging study as part of the staging process. A CT scan of the abdomen and pelvis revealed no lymphadenopathy or hepatosplenomegaly. The bone marrow biopsy was negative for lymphoma. Gallium scan showed increased accumulation in the frontoparietal region of the head, otherwise the tracer distribution was unremarkable. The patient received whole-brain radiation totalling 3000 cGy and was started subsequently on the CHOP (Cytoxan, Adriamycin, Vincristine and Decadron) regimen.

Discussion

Non-Hodgkin's lymphomas are the second most common malignancies in patients infected with the human immunodeficiency virus type I (HIV-1), after Kaposi's sarcoma. Data from two New York City hospitals collected between 1980-1987 revealed a 194-fold increase in the incidence of lymphoma in AIDS patients as compared to the age and sex-matched population (2).

AIDS-related lymphomas share common pathologic features, in that the majority are of the B-cell varieties. The predominant histologic picture consists of high grade B-cell lymphomas either of small non-cleaved cells typical of Burkitt's or Burkitt-like lymphoma, or of immunoblastic cells with plasmacytic features (3). Intermediate grade cell lymphomas are relatively less common, nevertheless, a 6-9-fold increase has been noted between 1979 -1987 (4). Pederson et al. (5) in a review of 51 AIDS patients, noted that 25% of NHL were of the diffuse, large cell, intermediate grade cell lymphomas, a histopathology

assays revealed positive staining of the large tumour cells for the B-cell marker L26 (CD20) indicating a malignant B-cell lymphoma.

The patient's condition remained stable without recurrence of seizure activity. A repeat CT scan of the head, after 2 weeks of therapy for toxoplasmosis, demonstrated no improvement in the size or the number of the lesions. A right frontal stereotactic brain biopsy was then performed which revealed a large cell malignant lymphoma similar to the bronchial biopsies.
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reseeming the case under discussion. Rabkin et al. (6) reported similar findings in HIV-infected haemophiliac patients with NHL. Extranodal sites are frequently involved in this group of patients at the time of initial presentation (56–84% of reported cases compared to 40% incidence in non-HIV-related lymphoma). Central nervous system, gastrointestinal tract, bone marrow and liver are among the most common sites involved (7).

Pulmonary involvement by NHL is considered a relatively rare condition. In the earliest series, Ziegler et al. (7) reported a 9% incidence of lung involvement out of 90 homosexual men with NHL. According to most recent studies, the incidence varies between 0–25% (8). Endobronchial lymphoma in HIV-infected persons has been described in two previous case reports (9,10). In both cases, the lesions were solitary and localized to the trachea. Fiberoptic bronchoscopy failed to provide the diagnosis, and rigid bronchoscopy was required to obtain adequate tissue samples. The lesions were both described as diffuse large cell immunoblastic lymphoma. This case is, to our knowledge, the first to describe multiple endobronchial tumours secondary to intermediate grade NHL in an AIDS patient whereby the diagnosis was made by fiberoptic bronchoscopy. The inability to reach a diagnosis by fiberoptic bronchoscopy in the two previous case reports could be attributed to the high propensity of these tumours to develop necrosis, notably the high grade cell type. In all three cases, including this one, the bronchoscopic findings were out of proportion to those of chest radiography. The characteristics of the endobronchial tumours presented in this case namely the friability and the vascularity, carry a large resemblance to similar lesions described in non-HIV-infected patients with multiple endobronchial lymphoma (11). The most common sites of endobronchial involvement in these cases were the main bronchi, the lobar bronchi and the trachea, respectively. The presenting symptoms were dyspnoea, cough, wheezing, stridor and haemoptysis. In a minority of patients there were minimal or no respiratory symptoms (12).

Our patient improved clinically after initiation of chemotherapy. A follow-up chest roentgenogram revealed complete resolution of the right hilar infiltrate. A repeat bronchoscopy was not performed. The overall prognosis in patients with AIDS-related lymphoma seems to correlate best with the CD4 count. Karnofsky performance score less than 70%, diagnosis of AIDS prior to lymphoma, and bone marrow involvement are independently associated with shorter survival (3). Unfortunately, successful treatment with combination chemotherapy are often cut short by HIV-related illnesses.

This case illustrates the need to include NHL in the differential diagnosis of multiple endobronchial lesions in HIV-infected patients, and the potential widespread endobronchial disease in face of minimal chest radiographic or clinical abnormalities.

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References