Clinical Study

Meningitis with Burkitt like B-cell lymphoma in HIV infection

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Key words: AIDS, B-cell lymphoma, lymphomatous meningitis

Abstract

Malignant lymphoma with meningeal involvement was detected in 7 patients with stage IV HIV infection. The diagnosis of lymphoma was made at a maximum of four months before discovery of meningeal involvement. In our seven cases the lymphoma was B-cell type, one case expressed Kappa chains, four cases demonstrated Lambda chains and in two cases differentiation was not possible. A review of findings in all HIV positive patients treated in the same period revealed 10 non-Hodgkin lymphomas of the B-cell type, though meningeal and cerebral involvement was observed only in B-cell lymphoma of the Burkitt type.

Introduction

Primary and metastatic lymphoma with involvement of the central nervous system (CNS) is often found in patients with AIDS [1–3]. Kaposi sarcoma is much more common than lymphoma in these patients, but the nervous system is rarely involved [4]. It has been demonstrated that patients with AIDS who develop malignant lymphomas usually undergo reactivation of infection with the Epstein-Barr virus (EBV). Chronic antigenic stimulation and polyclonal activation of B-cells generally occur, but these patients are unable to control B-cell proliferation [5, 6]. Demonstration of specific surface markers [7–9] permits immunological characterization of the particular B-cell proliferation involved.

In this study we present findings in 7 patients with AIDS and generalized lymphomas of the Burkitt type with clinical signs and characteristic cerebrospinal fluid (CSF) findings which resulted in a diagnosis of lymphomatous meningitis. The study deals with clinical findings, special diagnostic problems and prognosis of this increasingly important group of patients with HIV infection.

Methods

For the present study during a period of 18 months (1988–1989) we collected CSF samples in 41 patients with HIV infection. Diagnosis and classification of HIV infection were made on the basis of criteria established by the CDC. 10 patients also had confirmed diagnoses of malignant B-cell lymphoma. 9 of these cases involved lymphomas of the Burkitt type, while the remaining patient had undifferentiated lymphoma which defied further classification. Malignant cells were found in the CSF of 7 patients; all of these patients suffered from B-cell Burkitt type lymphoma. A diagnosis of lymphomatous meningitis was made in nine other patients without evidence of HIV infection during the same period, one suffered from Burkitt type lymphoma.

The diagnosis of lymphoma and immunological classification of tumours were confirmed by biopsy in every case. Clinical staging was performed using bone marrow biopsy, lymphangiography and computed tomography of the central nervous system and the cervical, thoracic and abdominal regions.

CSF cells were counted in the Fuchs-Rosenthal chamber, and cytological studies were performed
with Pappenheim stain after concentration of the cells in the Sayk sedimentation chamber. Additional cell preparations were made for immunological differentiation for comparison of the CSF cells with malignant cells obtained at biopsy. We shall present the most important clinical and laboratory findings in these patients.

Results

Five patients undergoing chemotherapy for malignant lymphomas of the Burkitt type developed clinical signs of lymphomatous meningitis within a few weeks of the initiation of therapy. In two other patients lymphoma cells were identified in the CSF when the initial diagnosis of lymphoma was made. Prophylactic skull irradiation was not performed initially in the first six patients.

Virtually all of these patients had malignant lymphomas of the Burkitt type. Tumour cells demonstrated lambda chains in 4 patients and expressed kappa chains in one patient while differentiation was not possible in two cases.

Patient 1

HIV infection was documented almost two years previously in this 50-year-old male. Lymphadenopathy was diagnosed in the right axilla in February 1988. Examination of a biopsy specimen resulted in a diagnosis of Burkitt type lymphoma, and immunological differentiation documented 90% kappa chains and 2% lambda chains. One month after histological diagnosis of lymphoma the patient developed paraplegia at the level of T 10 with spastic paralysis and sensory deficits in both legs. Computed tomography demonstrated a paravertebral and intraspinal tumour extending from the 9th to the 11th thoracic vertebrae with compression of the spinal cord. Bone marrow biopsy documented infiltration by lymphoma. The findings at lumbal puncture are summarized in Table 2. CSF cytology was characterized by a large number of cells from a highly malignant lymphoma. Despite chemotherapy with the CHOP protocol and skull irradiation, there was no significant change in the CSF findings. The patient died three months after initial diagnosis. Autopsy and histological studies revealed diffuse penetration of the subarachnoid space by the lymphoma. The tumour extended along the Robin-Virchow spaces into the brain tissue.

Fig. 1. Time concerning the discovery of HIV infection, the diagnosis of Burkitt-type lymphoma and the onset of lymphomatous meningitis.