MALIGNANT LYMPHOMA, LYMPHOBLASTIC (T CELL) — A CASE REPORT

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SYNOPSIS

A case of malignant lymphoma, lymphoblastic (T cell) is reported. The clinical and laboratory findings were consistent with the above diagnosis and 80% of the abnormal (blast) cells in the bone marrow aspirate showed T cell characteristics by the sheep erythrocyte-rosetting test. The nature and importance of this rare disease entity is further discussed.

INTRODUCTION

Malignancies of the lymphoid system have been broadly classified into two groups, the lymphomas and the leukaemias. Recent studies into the nature of lymphocyte cell surface markers and receptors have led to major changes in the concepts and classification of lymphomas and leukaemias and an immunological categorization of the former based on the T (thymus-derived) and B (bone marrow-derived) cell systems have been proposed in a series of papers since 1971 (Lukes and Collins, 1974). The majority of non-Hodgkin's lymphomas appear to be of B cell origin (Lukes and Collins, 1975) whereas T cell lymphomas are relatively uncommon (Brouet and Flandrin, 1977). A lymphoproliferative disorder that has been recently classified as a T cell lymphoma (non-Hodgkin's) is malignant lymphoma, lymphoblastic (Nathwani *et al.*, 1976). We report a case in whom both the clinical features and the laboratory findings are suggestive of this rare entity.

CASE REPORT

A 17 year old Malay male was admitted to the University Hospital, Kuala Lumpur for investigation of cervical lymphadenopathy which had developed over the preceding 3 weeks. The nodes were painless. There was no fever, weight loss, fatigue, bone pain or exertional dyspnoea. There was no history of epistaxis or easy bruising. The patient had been working right up to the time of admission and there had been no previous illnesses. Family history was not significant.

The patient was afebrile; pulse, respiration and blood pressure were normal. Examination revealed significant lymphadenopathy in anterior and posterior cervical regions, supraclavicular fossae, both axillae and right and left inguinal regions. The nodes ranged in size from 0.5 to 2 cm; they were non-tender, discrete and rubbery in consistency. The liver and spleen were enlarged 4 cm and 2 cm below the coastal margins respectively. The genitalia were normal.

Laboratory findings were as follows: Hb 13.0 gm/100 ml; white cell count at initial examination was 14,100/ul (neutrophils 41%, lymphocytes 50%, blast cells 3%, monocytes 5%, eosinophils 1%) and this progressively increased to 384,000/ul (blasts 67%) over a period of 2 weeks (Fig. 1). The platelet count dropped from 165,000/ul to 92,000/ul also over this 2-week period. The blood urea, serum calcium, creatinine and uric acid were normal. Total protein was 7.0 gm/100 ml (albumin 3.0 gm/100 ml, globulin 4.0 gm/100ml). Bilirubin was normal and so was alanine aminotransferase activity. Aspartate aminotransferase was 51 IU/L (normal 2-22 IU/L) and alkaline phosphatase was 250 IU/L (normal 34-133 IU/L). An x-ray film of the chest was normal and a tomogram did not show any hilar or mediastinal mass. Bone marrow examination showed a hypercellular marrow with 75% abnormal (blast) cells (Fig. 2). These varied in size and shape and many had convoluted nuclei with delicate chromatin pattern and prominent nucleoli. Megakaryocytes were slightly reduced in number. Some of the blast cells were PAS positive and all were uniformly peroxidase negative.

MATERIALS AND METHODS

Lymphocyte preparation. Lymphocyte cell suspension was prepared from a bone marrow aspirate using the Ficoll-Hypaque density gradient (Boyum, 1968).

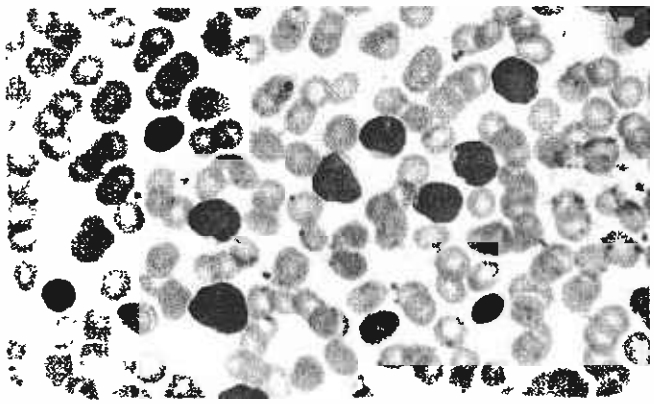

Fig. 1 Peripheral blood film. May Grunwald Giemsa stain. Magnification x 400.

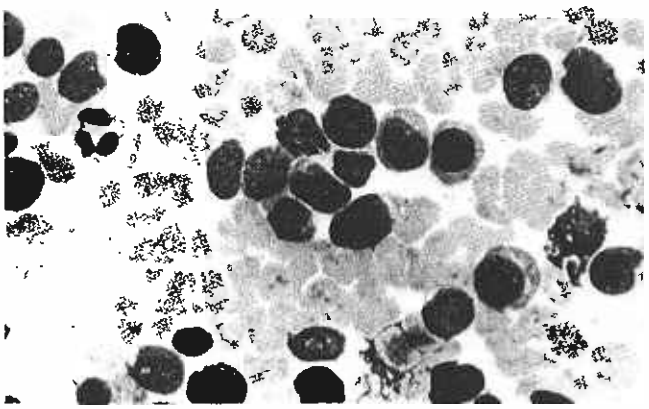

Fig. 2 Bone marrow aspirate. May Grunwald Giemsa stain. Magnificaiton x 400.

Lymphocyte enumeration. Procedures for T and B cell enumeration have been published previously (Winchester and Ross, 1976; Pang *et al.*, 1979). In brief, B cells were enumerated by indirect immunofluorescence using fluorescein-conjugated anti-$(Fab)_2$ fragment antisera (Behringwerke, W. Germany). T cells were enumerated by the sheep erythrocyte rosetting method. A lymphocyte is counted as rosette-forming if three or more erythrocytes adhere. Immunoglobulin and complement levels in serum were measured by standard radial immuno-diffusion methods using commercially prepared plates (Behringwerke, W. Germany).

RESULTS

Histological examination of the bone marrow aspirate revealed 75% abnormal (blast) cells (Fig. 2). Incubation with sheep erythrocytes showed that a majority (80%) of these were rosette-forming cells. Control peripheral blood lymphocytes showed a rosetting percentage of 77%. Additionally, less than 1% of these bone marrow cells bore surface immunoglobulin compared to 13% detected with the control lymphocytes. Immunoglobulin and complement levels were in the normal range. Table I illustrates some of the similarities and differences between the entity of malignant lymphoma, lymphoblastic and those of our patient.

TABLE I

	Malignant lymphoma, lymphoblastic	Patient
Age	Older children, adolescents	17
Sex	Male > Female	Male
Mediastinal tumor	50% of cases	Absent
Lymphadenopathy	++	++
Hepatosplenomegaly	±	+
Bone marrow involvement	+	+
White cell count	Normal to increased	14,000 — 380,000/ul
% rosette-forming cells	Up to 80%	80%
Acid phosphatase	+	N.T.*
TdT*	+	N.T.

*N.T. = not tested
+TdT = terminal deoxynucleotidyl transferase

DISCUSSION

Malignant lymphoma, lymphoblastic has been recognized recently as a distinct type of lymphoid neoplasm (Nathwani *et al.*, 1976). In the past this group of lymphomas have been variously called diffuse poorly differentiated lymphocytic lymphomas, lymphosarcomas, Sternberg sarcomas or acute lymphoblastic leukaemia with mediastinal mass (Nathwani *et al.*, 1976). The more recent classification of lymphomas include this entity under such terms as lymphoblastic lymphoma, convoluted or non-convoluted lymphoma (T cell) or diffuse lymphosarcoma, lymphoblastic.

All of the above diseases have the following characteristics:

(a) higher incidence in older children and younger adolescents
(b) high male to female ratio
(c) presence of a mediastinal mass in 50% of cases
(d) bone marrow involvement with a leukaemic blood picture
(e) morphologic features of abnormal cells being very similar to that of acute lymphoblastic leukaemia (Nathwani et al., 1976).

In a majority of cases the neoplastic cells have been identified as T cells (Smith et al., 1973). In addition, the abnormal cells are positive for acid phosphatase and terminal deoxynucleotidyl transferase (see Case Records, N. Engl. J. Med., 1978).

Our patient is a young male with lymphadenopathy, bone marrow involvement and a rapidly evolving leukaemic blood picture with cells that are very similar to those of acute lymphoblastic leukaemia, the majority of these possessing T cell features. These results are in accord with most of the criteria required for a diagnosis of malignant lymphoma, lymphoblastic (T cell) as discussed above.

The possibility whether this patient could have had a T cell-derived acute lymphoblastic leukaemia (ALL) should also be considered. T-derived ALL and malignant lymphoblastic lymphoma have very similar clinical, morphologic and immunological features and are thought by some to be similar diseases (Sen and Borella, 1975). It has also been suggested that the term acute lymphocytic leukaemia should be restricted to the 'null' cell type (Lukes, 1978). In T-derived ALL the median age of patients is 10 years, the median white cell count at diagnosis is 100,000/ul or more and most of these patients have liver and spleen enlargement greater than 5 cm below the costal margin (Dow et al., 1977). Together with these, the patients usually present with features of acute leukaemia e.g. anaemia and/or thrombocytopenia. The patient in our case is 17 years of age, was not anaemic nor thrombocytopenic at presentation and the initial white cell count was only 14,000/ul with few abnormal cells. Therefore, we contend that our patient is a rare case of malignant lymphoma, lymphoblastic (T cell).

Although T cell lymphomas are uncommon, it is now known that Sezary's syndrome and mycosis fungoides are T cell lymphomas (Brouet and Flandrin, 1977). It is perhaps important to recognize malignant lymphoma, lymphoblastic (T cell) as a disease entity as the prognosis for this category of lymphomas appeared to have been much worse than for other groups, the median survival being only about eight months. (Nathwani et al., 1976). However, a more aggressive approach using various drugs including adriamycin together with CNS prophylaxis seems to have improved the median survival (Weinstein et al., 1977). Furthermore the recognition of this disease entity may be of importance in relation to therapy in the future, with the probable development of drugs selective against T cells (Spreafico and Anaclerio, 1978).

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