Letters to the Editor

Pathology of the spleen in large granular lymphocyte leukaemia

Large granular lymphocyte (LGL) leukaemia is an uncommon disorder characterised by clonal expansion of large granular lymphocyte subsets in bone marrow, spleen, and peripheral blood.¹ We describe an analysis of the spleen from a 56 year old woman with LGL leukaemia which shows a pattern of LGL accumulation that seems to be characteristic of this disorder and therefore of potential diagnostic value.

The presenting clinical features described previously² included anaemia—haemoglobin 9.4 g/dl and a white cell count $15.1 \times 10^9/l$ with a differential of neutrophils 14%, monocytes 4%, lymphocytes 82% (95% large granular type). The lymphocytes showed a CD2 + CD3 + CD8 + Leu7 + CD11b - CD16 - surface antigen phenotype. Within 12 months the haemoglobin concentration fell to 6.6 g/dl and the patient had to be transfused regularly. Her spleen was removed which resulted in an initial improvement of the anaemia followed by relapse (haemoglobin 7.0 g/dl, white cell count $70 \times 10^9/l$). Subsequent treatment with cyclophosphamide (100 mg/day) improved and stabilised the haematological indices (haemoglobin 11.5 g/dl, white cell count $8.0 \times 10^9/l$).

The spleen weighed 520 g, the cut surface showed even distribution of multiple, pale nodules about 1 mm in diameter. Microscopically the splenic architecture was preserved, the white pulp was increased, and as well as apparently normal peri-arteriolar lymphocyte cuffs, there were many germinal follicles. The red pulp showed a homogeneous infiltration of sinusoids and cords by small, apparently mature lymphocytes. The few previous reports of the morphological detail of the spleen in LGL leukaemia

also noted red pulp infiltration by lymphocytes, together with white pulp preservation, including prominent germinal follicles,³⁻⁵ suggesting that this histological pattern is highly characteristic. Comparison with the splenic histology in other lymphoproliferative disorders indicates clear differences that may be of value in the differential diagnosis: in B cell chronic lymphocytic leukaemia and well differentiated B cell lymphomas the white pulp is usually infiltrated, whereas in conditions with red pulp infiltration—for example, hairy cell leukaemia—usually atrophy or obliteration of the white pulp occurs.

The immunohistochemical staining reactions of the various splenic zones are shown in the table. The normal white pulp populations of small lymphocytes were preserved, there was no white pulp infiltration by LGL phenotype cells. The phenotype of lymphocytes infiltrating the red pulp was characteristic of LGLs, although it differed from the circulating cells by the possession of the CD16 marker corresponding to the IgFc gamma receptor. A similar difference in IgFc gamma receptor expression between splenic and blood LGLs has also been noted in a previous case.⁵ The reason for this discrepancy is unclear but is unlikely to be due to selective accumulation of CD16+ cells in the spleen as we were not able to show any increase in circulating CD16+ cells after removal of the spleen.

Although most cases of LGL leukaemia are now diagnosed by circulating cell surface antigens, some may still be diagnosed only when the spleen is removed, as at presentation 50% have splenomegaly and 30% do not have a lymphocytosis.¹ Recognition of the characteristic histological pattern of splenic disease described here should expedite confirmation of the diagnosis by the appropriate lymphocyte marker studies.

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References

- 1 Loughran TP, Starkebaum G. Large granular lymphocyte leukaemia, report of 38 cases and review of the literature. *Medicine* 1987;66:397-405.
- 2 Standen GR, Masters G, Pill R, Matthews N, Booth M, Baines P. Production of haemopoietic growth factors and gamma interferon by large granular lymphocytes from patients with T-gamma lymphocytosis. *Int J Cell Cloning* 1987;5:302-14.
- 3 Thien SL, Catovsky D, Oscier D, et al. T-chronic lymphocytic leukaemia presenting as primary hypogammaglobulinaemia—evidence of a proliferation of T-suppressor cells. *Clin Exp Immunol* 1982;47:670-6.
- 4 Brisbane JU, Berman LD, Osband ME, Neiman RS. T8 chronic lymphocytic leukaemia, a distinctive disorder related to T8 lymphocytosis. *Am J Clin Pathol* 1983;80:391-6.
- 5 Loughran TP, Kadin ME, Starkebaum G, et al. Leukaemia of large granular lymphocytes: association with clonal chromosomal abnormalities and autoimmune neutropenia, thrombocytopenia, and haemolytic anaemia. *Ann Intern Med* 1985;102:169-75.

Diagnosis of intestinal microsporidiosis in patients with AIDS

Microsporidia are tiny protozoal parasites of the phylum Microspora.¹ The only species yet recognised in human enterocytes is *Enterocytozoon bienersi*^{1,2} and diagnosis is difficult. Most identifications have been made at electron microscopy.^{2,4} Previous reports, however, have indicated that they are visible in sections stained with haematoxylin and eosin.^{3,6}

Table Results of immunoperoxidase studies on frozen sections, paraffin wax embedded tissue sections* and cytospin smears† derived from enriched LGL suspensions on which FACS analysis‡ was performed

	Leu7	CD3	CD4	CD5	CD8	CD16	CD19	CD45	CD45*	CD45RT*	L26*
White pulp											
Periarteriolar zone	+	-	+++	+++	++	-	-	+++	+++	-	-
B cell zone											
Germinal centre	+	-	++	+	+	-	+++	+++	++	-	+++
Mantle zone	-	-	+	+	+	-	+++	+++	+++	+	+++
Marginal zone	-	-	++	++	+	-	+	+++	+++	-	++
Red pulp	+++	+++	+	+	+++	+++	-	+++	+	-	+
Circulating LGLs†	++	+++	+	+	+++	-					
Circulating LGLs‡ (FACS)	63%	93%	13%		72%	7%					

Semi-quantitative scoring: - = absent; + = <5%; ++ = 5%-50%; +++ = more than 50% of cells positive for the marker.