Mast cells in non-Hodgkin's lymphomas: a quantitative study

The importance of mast cells in normal and malignant lymph nodes is unknown, but these cells may play a part in antigen manipulation,¹ and there is evidence that they may act as an index or "library" of antigens in the process of T cell help.² Our previous study of mast cell numbers in Hodgkin's disease led to interesting results, with striking differences between Rye subtypes.³ In view of the supposed relation between mast cells and T cells, we undertook a quantitative study of the former cells in a series of T and B derived non-Hodgkin lymphomas (NHL). This series had previously been characterised using a large range of monoclonal and polyclonal antibodies in addition to conventional morphology.

Routinely processed, formalin fixed, paraffin wax embedded sections, cut at 3 µm thickness were used; these were stained by means of the astra blue technique, as described previously.³ The numbers of mast cells, which were stained an intense blue colour, were counted in 10 standard 0.25 mm² fields, using a graticule to prevent

recounting. Random fields were used and the numbers of mast cells per 0.25 mm² field were calculated. A video linked microprocessor controlled semiautomatic image analyser was used.

In the 10 specimens of reactive follicular hyperplasia (RFH) mast cells were observed in T dependent regions and within or adjacent to lymphatic sinuses, but not in B follicles. There was no distinct pattern to the disposition of the cells in the lymphomatous nodes which comprised the following subtypes of B-non-Hodgkin's lymphoma: lymphocytic (n = 10); centrocytic (n = 5); follicular centroblastic-centrocytic (n = 10); diffuse centroblastic-centrocytic (n = 5); lymphoplasmacytoid (n = 10); lymphoplasmacytic (n = 10); immunoblastic (n = 5); centroblastic (n = 5); lymphoblastic (n = 5). There were five "genuine histiocytic" lymphomas and the following T non-Hodgkin's lymphoma specimens: T zone (n = 5); T cell (n = 5) and polymorphic T cell (n = 3).

The results (figure) show that, in general, RFH and T non-Hodgkin's lymphoma contain many more mast cells than B non-Hodgkin's lymphoma. A consistent finding,

however, was that lymphoplasmacytoid and lymphoplasmacytic B non-Hodgkin's lymphoma contained as many mast cells as T non-Hodgkin's lymphoma. The possible reasons for this are unclear: certainly mastocytosis has been described in the bone marrow in cases of chronic lymphocytic lymphoma and other varieties of non-Hodgkin's lymphoma. Furthermore, many mast cells were detected in the marrows of patients suffering from Waldenström's macroglobulinaemia.⁴ A later study showed greatly increased numbers of Giemsa stained mast cells in lymphoplasmacytic non-Hodgkin's lymphoma compared with those in lymphoplasmacytoid tumours and chronic lymphocytic leukaemia affecting lymph nodes.⁵ This is in minor contrast to our findings where there was no significant difference in mast cell numbers between lymphoplasmacytic and lymphoplasmacytoid non-Hodgkin's lymphoma; the reason for this discrepancy is uncertain but may result from different diagnostic criteria.

Although the presence of many mast cells in malignant lymphomas could act as a diagnostic pointer towards T cell derivation, there is considerable overlap between the ranges of mast cell numbers in the different groups of non-Hodgkin's lymphoma. Thus in the individual case this enumeration is not necessarily helpful. Furthermore, the presence of similar numbers of these cells in B immunocytomas to those in T non-Hodgkin's lymphoma renders the diagnostic value of mast cell enumeration of less value. None the less, a total of virtual absence of the cells should lead to a diagnosis of B cell lymphoma (other than immunocytomas).

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Figure Comparison of No of mast cells found in RFH and T non-Hodgkin's lymphoma.