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, and there is evidence that they may act as an index or "library" of antigens in the process of T cell help. Our previous study of mast cell numbers in Hodgkin's disease led to interesting results, with striking differences between Rye subtypes. 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.

Routine 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. 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 = 10) and polymorphic T cell (n = 5).

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 marrow of patients suffering from Waldenström's macroglobulinemia. 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. This is in minor contrast to our findings where there was no significant difference in mast cell numbers between lymphoplasmacytoid and lymphoplasmacytic 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 immunocytoma).

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

References