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Incidence and clinical importance of bone marrow eosinophilia in Hodgkin's disease (BNLI Report No 29)

E A MACINTYRE,* B VAUGHAN HUDSON, G VAUGHAN HUDSON, A M JELLIFFE, D C LINCH*

*From the *Haematology and British National Lymphoma Investigation Departments, Middlesex Hospital, London*

SUMMARY A retrospective study of 136 bone marrow aspirates was undertaken before treatment to evaluate the importance of bone marrow eosinophilia in Hodgkin's disease. This occurred in 28 patients (21%) but did not correlate with age, sex, B symptoms, histopathological type or peripheral blood count. It also had no effect on survival. Bone marrow eosinophilia, therefore, seems to represent a common but non-specific reaction to Hodgkin's disease.

Peripheral blood eosinophilia is found at presentation in 15% of patients with Hodgkin's disease.[1] It has been suggested that this eosinophilia does not affect prognosis.[2] We have recently shown that eosinophilia, as a component of a generalised leucocytosis, has no prognostic importance, but that selective eosinophilia, without a generalised leucocytosis, confers a considerable survival advantage.[1] It is also well recognised that examination of bone marrow in patients with Hodgkin's disease may show "reactive" changes in the absence of evident infiltration by disease. The importance of some of these changes is not well established; in particular, while bone marrow eosinophilia is well recognised, its prevalence, association with peripheral blood eosinophilia, and prognostic relevance has not been fully evaluated. We therefore undertook a retrospective study of 136 aspirate smears to assess this.

Patients and methods

All patients were part of the clinical trials in Hodgkin's disease, which has been performed by the British National Lymphoma Investigation (BNLI) trials since 1970. Pretreatment bone marrow aspirate smears of all stages were examined in 136 adult patients seen at the Middlesex Hospital. Five hundred cell differential counts were performed on May-Grünwald-Giemsa stained smears. The percentage of myeloid series, erythroid series, eosinophils (including eosinophil myelocytes and metamyelocytes), lymphocytes, and plasma cells was calculated. Only 44 trephine biopsy specimens were available, as many were performed before staging biopsies became a routine procedure. Statistical curves were calculated using the life table method, in addition to statistical comparison of curves carried out by the log rank test, as described by Peto *et al.*[1] Other variables were analysed by the χ^2 test.

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Results

Bone marrow aspirates were examined in 136 patients. None of these showed Reed-Sternberg cells. Infiltration was seen in two of the 44 trephines available (4·5%). Eosinophilia was defined as >6% (normal range 0·3–6·0%) and plasmacytosis as >3·5%, (normal range 0·1–3·5%).[2] No attempt was made to quantitate cellularity on aspirated specimens.

Twenty eight of 136 patients (21%) had marrow eosinophilia; none had plasmacytosis. Those with marrow eosinophilia were then compared with those without marrow eosinophilia for differences in age, sex, stage, symptoms, histopathological type, peripheral blood cytopaenias, and peripheral blood eosinophilia (table). No significant differences were seen. Peripheral blood eosinophil counts at presentation were available in 26 of the 28 patients with bone marrow eosinophilia. Five of these patients showed peripheral blood eosinophilia and this was selective in three. In the group with normal bone marrow eosinophil counts 14 patients had peripheral blood eosinophilia. In five of these patients there was no associated generalised peripheral leucocytosis. Comparison of

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Table *Comparison of clinical and pathological features in patients with marrow eosinophilia, normal marrow eosinophil counts, and in all BNLI patients*

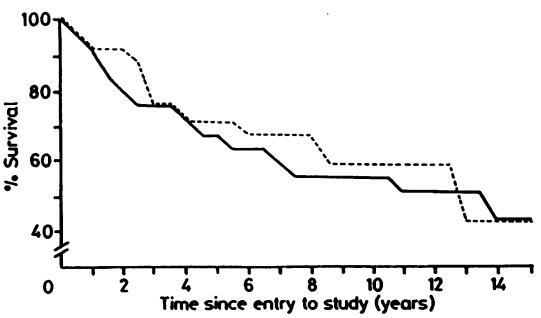
	Eosinophilia		*Normal*		*All patients†*	
	No	*(%)*	*No*	*(%)*	*No*	*(%)*
Total No of patients	27*	(100)	107	(100)	2002	(100)
Age 15–49	21	(78)	84	(78·5)	1566	(78·5)
50+	6	(22)	23	(21·5)	428	(21·5)
Male	18	(67)	61	(57)	1307	(65)
Stage 1	4	(15)	15	(14)	423	(21)
Stage 2	6	(22)	33	(31)	564	(28)
Stage 3	8	(30)	25	(23)	594	(30)
Stage 4	9	(33)	34	(32)	415	(21)
B symptoms	11	(41)	52	(49)	713	(36)
Pathology:						
Lymphocyte predominant	0	(0)	7	(7)	103	(5)
Nodular sclerosing I‡	15	(56)	56	(52)	992	(50)
Nodular sclerosing II	5	(18·5)	26	(24)	480	(24)
Mixed cellularity	5	(18·5)	15	(14)	346	(17)
Lymphocyte depleted	2	(7)	1	(1)	36	(2)
Other			2	(2)	33	(2)
Anaemia						
(Male < 13 g/dl, female < 12 g/dl)	7	(32)	41	(40)	600	(33)
Neutrophilia (> 7·5 × 10^9/l)	4	(23·5)	26	(34)	416	(34)
Lymphopaenia (< 1·5 × 10^9/l)	12	(57)	43	(45)	676	(40)
Eosinophilia (> 0·44 × 10^9/l)	5	(19)	21	(16)	187	(15)

*One patient from each group was omitted from further analysis as insufficient data were available.
†This column refers to all adult patients with Hodgkin's disease entered into the BNLI trials between January 1970 and January 1985.
‡Nodular sclerosing Hodgkin's disease has been subdivided into grades I and II, the latter containing areas of lymphocyte depletion and numerous pleomorphic Hodgkin's cells (Bennett, Tu, Vaughan Hudson[3]).
No differences observed were significant by analysis of χ^2 values.

both groups with all patients in the BNLI Hodgkin's disease trials showed no significant differences (table). The figure shows the actuarial survival curves of patients with and without marrow eosinophilia, there being no significant difference between the two groups ($\chi^2 = 0{\cdot}3$).

Discussion

This study shows that marrow eosinophilia is, indeed, common in Hodgkin's disease, occurring in 21% of our series but that it does not correlate with age, sex, stage, histopathological type, or peripheral eosinophilia. This agrees with the findings of Kass and Votaw,[4] who noted greater than 10% eosinophilia in 29 of 49 bone marrow aspirates (59%). In addition, we analysed the influence of marrow eosinophilia on prognosis and found it to be without effect. Kass also noted marrow plasmacytosis in 29% of patients, always in association with eosinophilia, but this was not confirmed in our study.



Actuarial survival of 28 patients with marrow eosinophilia (----) compared with 108 with normal marrow eosinophil counts (———) ($\chi^2 = 0{\cdot}3$ NS).

The incidence of both selective and non-selective peripheral blood eosinophilia was similar in the two groups, although the number of patients with peripheral eosinophilia in each group was too small to examine this adequately. The lack of any correlation with peripheral blood eosinophilia suggests that the latter is not due to increased bone marrow production, but the underlying cause remains unclear in both situations. It therefore seems that bone marrow eosinophilia represents a common but non-specific reaction to Hodgkin's disease.

References

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Requests for reprints to: Dr EA Macintyre, Department of Haematology, School of Pathology, Middlesex Hospital Medical School, Riding House Street, London W1P 7LD, England.

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