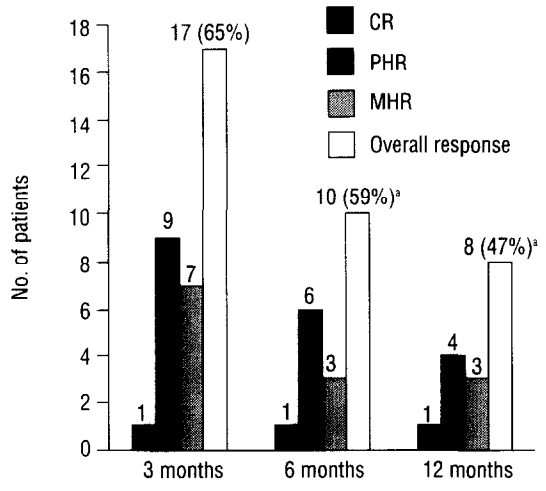
After 12 months of follow up, eight of the 17 original responders had maintained their response (one CR, four PHRs and three MHRs) (Fig. 1).



[a]Percentages refer to the 17 initial responders

Fig. 1. Follow-up of responders.

Toxicity

Adverse effects included weight loss (20 patients), flu-like syndrome (12 patients), temporary increase or appearance of lymph nodes (10 patients), massive increase of lymph nodes while in MHR (two patients), relapse of herpes zoster (one patient), and severe anaemia and thrombocytopenia (one patient).

CONCLUSIONS

Interferon alfa-2b is effective in early stages of B-CLL. More than 50% of our patients responded, with a rapid response in nine and a slow continuous response in eight patients.

The most prominent change in mean lymphocyte values was observed in the group receiving 1.5 MU interferon daily and this was statistically more significant compared to the changes observed in the group receiving 1.5 MU or 3 MU interferon t.i.w. Whether this is due to the effect of continuous low-dose alpha interferon or to the inclusion in this group of individuals with high lymphocyte counts is not clear. At 12 months, the results obtained during the first month were sustained in half of the patients.

Toxicity is evident but well tolerated by most patients.

1. Foon KA, Bottino GC, Abrams PG *et al.* Phase II trial of recombinant leukocyte A interferon in patients with chronic lymphocytic leukemia. *Ann Intern Med* 1985, **78**, 216-220.
2. O'Connell MJ, Colgan JP, Oken MM *et al.* Clinical trial of recombinant leukocyte A interferon as initial therapy for favorable histology non-Hodgkin's lymphomas and chronic lymphocytic leukemia: An Eastern Cooperative Oncology Group Pilot Study. *J Clin Oncol* 1986, 4, 128-136.
3. Pangalis GA, Griva E. Recombinant alfa-2b-interferon therapy in untreated stages A and B chronic lymphocytic leukemia. A preliminary report. *Cancer* 1988, **61**, 869-872.
4. Boussiotis VA, Pangalis GA. Randomized clinical trial with alpha-2b interferon in 26 stage A untreated B-chronic lymphocytic leukemia patients. *Nouv Rev Franc d'Hematol* 1988, **30**, 471-473.
5. Rozman C, Montserrat E, Vinolas N *et al.* Recombinant α2-interferon in the treatment of B-chronic lymphocytic leukemia in early stages. *Blood* 1988, **71**, 1295-1298.

Eur J Cancer, Vol. 27, Suppl. 4, pp. S79-S80, 1991
Printed in Great Britain

0277-5379/91 $3.00 + 0.00

Alpha Interferon in Patients with Progressive and/or Recurrent Hodgkin's Disease*

Benjamin Koziner

INTRODUCTION

SEVERAL SMALL studies have suggested that patients with Hodgkin's disease may be sensitive to therapy with alpha interferon [1-5]. We therefore undertook a study to determine the therapeutic efficacy and toxicity of recombinant interferon alfa-2b in six patients with progressive and/or recurrent Hodgkin's disease.

PATIENTS AND METHODS

Inclusion criteria for the study were as follows: histologically confirmed Hodgkin's disease; progressive or recurrent disease after first-line and salvage chemotherapy, with or without radiotherapy; measurable disease; adequate renal, hepatic and bone marrow function; a life expectancy of more than 3 months; and Eastern Cooperative Oncology Group performance grades of 0, 1 or 2.

Patient characteristics, including disease stage, histological diagnosis, and previous therapy, are shown in Table 1. All patients had received between three and five different salvage programmes, with no disease-free interval preceding administration of interferon. Two patients (1 and 5) had extranodal involvement and all had B symptoms.

Treatment consisted of interferon alfa-2b 5 million units

Correspondence to: B. Koziner.
B. Koziner is at the Unidad de Investigaciones Oncohematológicas, Buenos Aires, Argentina.

Table 1. Patient characteristics

Pt	Age (years)	Sex	Disease stage	Histological diagnosis	Previous therapy
1.	30	F	IV B	Nodular sclerosis	First-line + 3 salvage
2.	25	F	III B	Lymphocyte depletion	First-line + 3 salvage
3.	36	F	III B	Nodular sclerosis	First-line + 3 salvage
4.	32	M	III B	Mixed cellularity	First-line + 5 salvage
5.	19	M	IV B	Nodular sclerosis	First-line + 3 salvage
6.	13	M	III B	Lymphocyte depletion	First-line + 3 salvage

(MU)/day subcutaneously, 5 days per week, which was continued while clinical response was observed. In patients who progressed while on interferon, vinblastine was added at a dose of 10 mg intravenously every 2 weeks.

RESULTS

Response

Five of the six patients showed 'stable disease' (three during 4 months, one during 3 months, and one during 8 months)

Table 2. Response to treatment

Patient	Treatment	Partial remission	Stable disease	Duration (months)
1.	IFN		+	4
	IFN + VBL		+	12
2.	IFN		+	4
3.	IFN		+	4
	IFN + VBL		+	4
4.	IFN		+	3
5.	IFN + VBL		+	12
6.	IFN	+		26

(Table 2). When vinblastine was added in two patients with progressive disease while on interferon, prolongation of stable disease was observed for 4 and 12 months, respectively. Another patient had 12 months of stable disease while on interferon, vinblastine and local radiotherapy. Three patients died due to progressive disease.

One patient (number 6) with recurrent Hodgkin's disease obtained partial remission on interferon, with a greater than 50% reduction of a mediastinal mass, and disappearance of retroperitoneal lymphadenopathy and splenomegaly. Remission duration in this patient lasted for 26 months, at which time he developed autoimmune haemolytic anaemia that resolved after discontinuation of the drug and administration of corticosteroids. Although interferon was discontinued, it was not proven that this drug was responsible for the development of the phenomenon.

Toxicity

In contrast to other aggressive combination chemotherapy regimens, quality of life improved in all patients during interferon therapy. Side effects included flu-like syndrome (six patients), mild increase in liver enzymes (one patient), and supraventricular tachycardia (one patient, who had previously received anthracyclines and mediastinal radiation).

CONCLUSIONS

Treatment with interferon alfa-2b achieved a beneficial effect in patients with progressive and/or recurrent Hodgkin's disease after failure of other salvage programmes. Toxicity was minimal and enabled ambulatory treatment to be given.

The role of alpha interferon in the treatment of Hodgkin's disease requires further study in order to determine its efficacy, either as a palliative agent alone or in combination with radiotherapy or single chemotherapeutic agents, such as vinblastine. Alpha interferon may also be considered as maintenance therapy during remission, in order to increase disease-free survival, or as adjuvant therapy for the early stages of disease, in combination with radio- and/or chemotherapy, taking advantage of its mild toxicity.

1. Blomgren H, Cantell K, Johansson B *et al.* Interferon therapy in Hodgkin's disease: a case report. *Acta Med Scand* 1976, **199**, 527-532.
2. Horning SJ, Mergian TC, Krown SE *et al.* Human interferon alpha in malignant lymphoma and Hodgkin's disease. *Cancer* 1985, **56**, 1305-1310.
3. Clark R, Dimitrov N, Axelson J, Borst J. Leukocyte alpha interferon as a biological modifier in Hodgkin's and non-Hodgkin's lymphomas resistant to standard therapy. *Proc Am Soc Clin Oncol 20th Ann Meeting, Toronto* 1984, **3**, 255 (Abstract).
4. Ozer H, Leavitt R, Ratanatharathorn V *et al.* Experience in the use of DNA alpha-2 interferon in the treatment of malignant lymphomas. *Blood* 1983, **62**, 211 (Abstract).
5. Leavitt RD, Ratanatharathorn V, Ozer H *et al.* Alpha 2b interferon in the treatment of Hodgkin's disease and non-Hodgkin's lymphoma. *Semin Oncology* 1987, **14**, 18-23.

*Published by permission of Harwood Academic Publishers GmbH for rewritten paper: Del Carmen Ardaiz, Niborski, Koziner, which appears in *Leukemia & Lymphoma* 3, 5&6, 1991.