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Long-term follow-up of non-Hodgkin's lymphoma patients treated with ProMACE-CytaBOM: an effective regimen for the intermediate grade subtype

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Long-lasting results achieved in 54 patients with aggressive non-Hodgkin lymphoma treated with ProMACE-CytaBOM regimen were evaluated. Twenty-four out of 54 (45%) patients achieved a complete remission and 13 of them are still in continuous remission with a median survival of 53.5 months. Interestingly, in 16 patients with intermediate grade histology we obtained an overall response rate of 100%.

Among third-generation chemotherapy regimens, ProMACE-CytaBOM is considered a very effective protocol in patients with aggressive non-Hodgkin lymphomas (NHL), producing about a 70% rate of complete remission (CR) as first reported by Fisher and confirmed by subsequent studies.[1-4]

In our study 54 patients with aggressive NHL, 25 of whom at diagnosis, received ProMACE-CytaBOM chemotherapy according to the scheme proposed by Fisher *et al.* and updated by Longo *et al.*[2,5] The patients' clinical and histological characteristics are summarized in Table 1. All responding patients received a minimum of six cycles and almost all patients received 100% of the planned dose. Overall, 24 out of 54 (44.5%) patients achieved complete response (CR) and 20 (37%) a partial response (PR), reaching an overall response rate of 81%.

As expected, patients at diagnosis or with a more favorable histology and with a normal LDH serum level achieved better results, while differences in response rates were not observed when patients were analyzed according to age, sex, stage of disease, and mean dose intensity calculated for each single drug (Table 1). On the other hand, CR rates were significantly higher ($p < 0.05$) in previously untreated patients and in those with intermediate grade histology.

The estimated 5-year overall survival was 53%. When the analysis was done according to histological subtypes and previous therapy, untreated patients and those with intermediate histology showed statistically significant ($p < 0.05$) better survival curves (Figures 1 and 2).

Table 1. Patients' characteristics and results achieved in 54 patients treated with ProMACE-CytaBOM.

Characteristics	*CR*	*PR*	*CCR*
Age			
≤ 60 years	12/24 (50%)	8/24 (33%)	7/12 (58%)
> 60 years	12/30 (40%)	12/30 (40%)	6/12 (50%)
Sex			
male	13/32 (40%)	13/32 (40%)	7/13 (54%)
female	11/22 (50%)	7/22 (32%)	6/11 (54%)
Stage			
I-II	9/18 (50%)	7/18 (39%)	6/9 (67%)
III-IV	15/36 (42%)	13/36 (36%)	7/15 (47%)
Histology			
intermediate grade	16/22 (73%)	6/22 (27%)	8/16 (50%)
high grade	8/32 (25%)	14/32 (44%)	5/8 (62%)
Therapy			
untreated	16/29 (55%)	9/29 (31%)	11/16 (69%)
1 regimen	8/21 (40%)	9/21 (43%)	2/8 (25%)
> 1 regimen	0/4	2/4 (50%)	0/4
LDH			
≤ 450	16/29 (55%)	11/29 (38%)	8/16 (50%)
> 450	8/25 (32%)	9/25 (36%)	5/8 (62%)
IPI			
low/low-intermediate	16/27 (59%)	10/27 (37%)	11/16 (69%)
intermediate-high/high	8/27 (29%)	10/27 (37%)	2/8 (25%)
Total	24/54 (44%)	20/54 (37%)	13/54 (24%)

Abbreviations: CR: complete response; PR; partial response; CCR: continuous CR.

Grade 3-4 neutropenia (WHO classification) recorded in 15 patients, and nausea and vomiting were the most important and frequent hematologic and non-hematologic side effects.

Our results, in agreement with previous reports,[4,6-10] document an overall response rate of 81% with an apparent reduced number of CRs probably due to the higher median age of our patients, to a not negligible number of pre-treated cases and probably also to the very strict criteria adopted in defining CR. However, despite the reduced CR rate, 54% of complete responders in our study are still in CR after a considerable period. Interestingly, patients with intermediate grade of malignancy showed a response rate of 100% regardless of the previous therapy. The small number of this very lucky series of patients does not allow further analysis.

In conclusion our results, although less impressive in terms of CR rate than other previous reports[3-6] document that 54% of complete responder patients are still in CR after a median of 53 months. Hematologic toxicity and side effects were acceptable and never

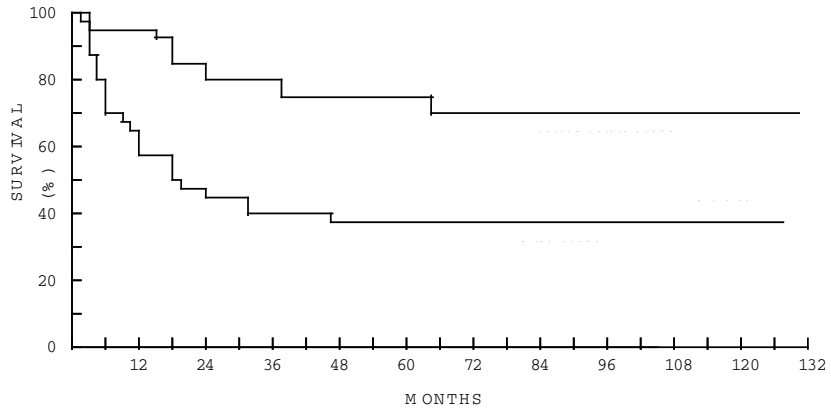

Figure 1. Survival curves of 54 NHL patients according to histological subtype (high grade vs intermediate grade).

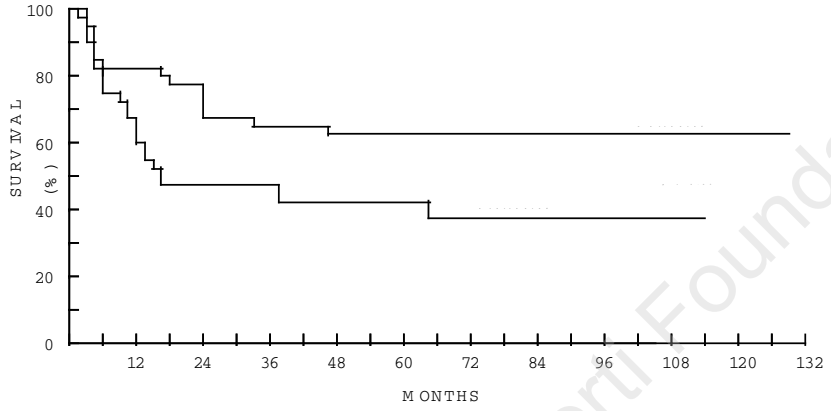

Figure 2. Survival curves of 54 NHL patients according to treatment (previously untreated vs pretreated).

lifethreatening, suggesting that the ProMACE-CytaBOM regimen is an effective and safe chemotherapeutic scheme.

Key words

Non Hodgkin lymphoma, ProMACE-CytaBOM regimen, long-term follow-up

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