

Treatment of Acute Lymphoblastic Leukemia in Childhood: A Report for the ALL 77-02 Group*

R. J. Haas, G. Gaedicke, U. B. Graubner, and G. Meyer

A. Patients and Methods

Since 1 December 1979, 149 children with acute lymphoblastic leukemia (ALL) have been treated according to the prospective study protocol ALL 77-02 [5]. Patients' characteristics are given in Table 1. High risk patients are defined by WBC > 25 × 10⁵/mm³ and/or T cell marker, AUL, or B cell ALL. The treatment protocols for standard risk and high risk patients are given in Figs. 1 and 2. During consolidation therapy, three intermediate dose methotrexate infusions [2] were administered at 10-day intervals; 24 h after the end of MTX infusion, L-asparaginase and ci-

trovorum factor were given [7]. The second part of consolidating consisted, in therapy group B of high dose cyclophosphamide (×2) and intramuscular Ara-C (×16) [6].

In both protocols, cranial irradiation was used to treat occult CNS leukemia: standard risk 18 Gy, high risk 24 Gy. All pa-

Table 1. Patient characteristics

Number	149
Age (median)	5 years, 11 months
Age <2 >10 years	36
Boys	82
Mediastinal mass	16
CNS positive	8
Hepatosplenomegaly	87
Leucocytes < 25 000/mm ³	102
Leucocytes > 25 000/mm ³	47

* Childrens Hospitals of the University of Ulm and Munich, FRG

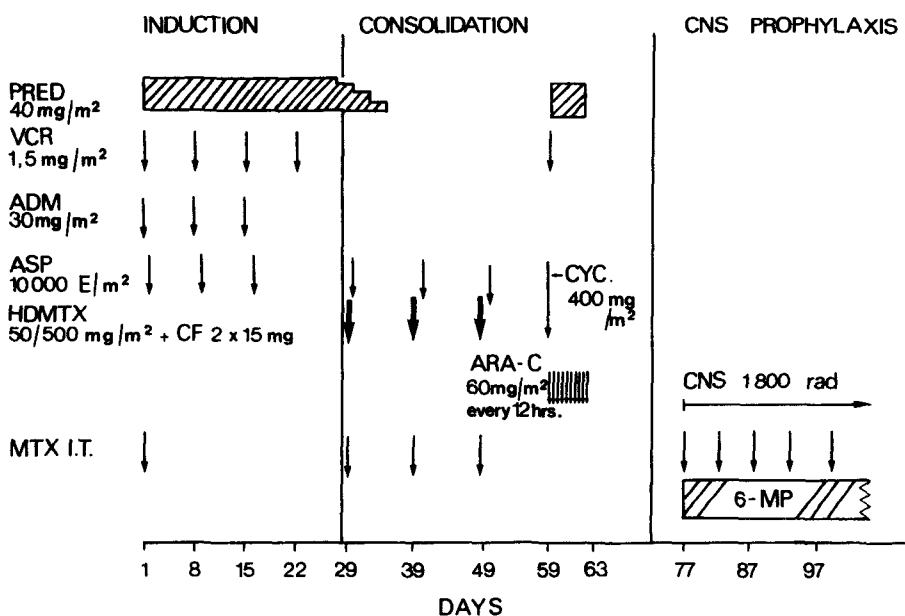


Fig. 1. Treatment protocol, therapy A (standard risk). PRED prednisone; VCR vincristine, ADM adriamycin; ASP L-asparaginase; DMTX high dose methotrexate; CF citrovorum factor; Ara-C cytosine arabinoside; CYC cyclophosphamide; 6-MP 6-mercaptopurine

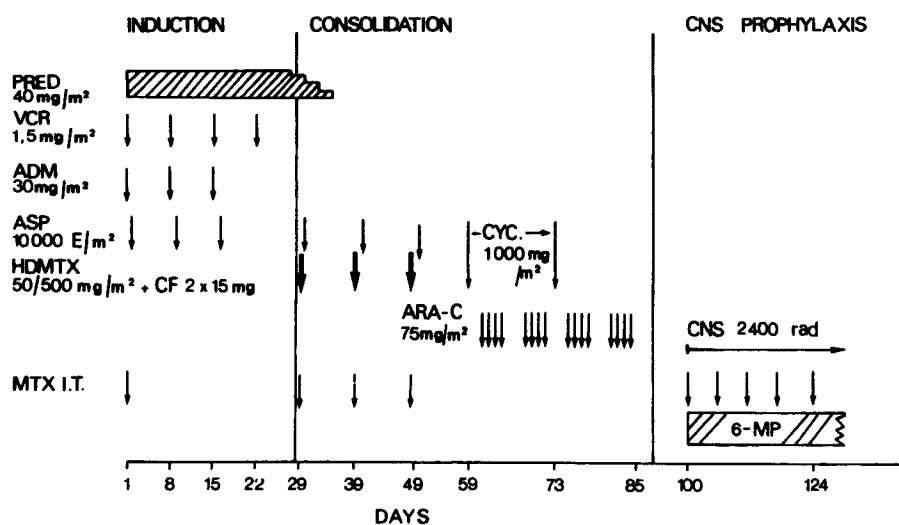


Fig. 2. Treatment protocol, therapy B (high risk). Abbreviations as in Fig. 1

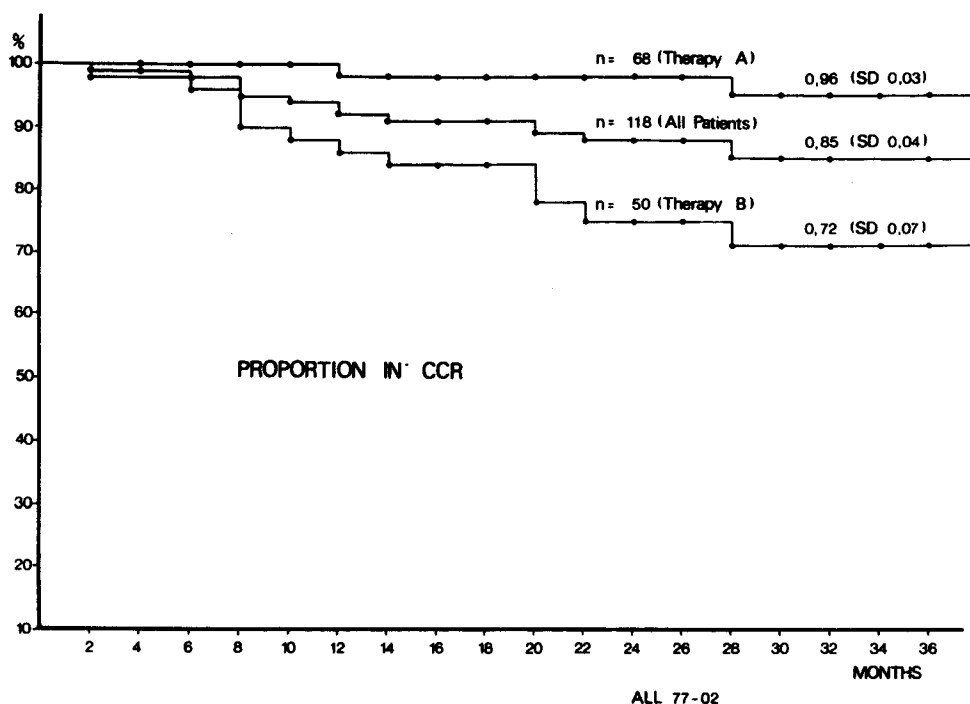


Fig. 3. Life table analysis of probability of continuous complete remission according to therapy

tients received nine doses of intrathecal MTX. Different doses of intrathecal MTX were applied in different age groups [1]: patients less than 1 year of age received 6 mg; patients 1–3 years of age received 8 mg; patients older than 3 years received 12 mg. Maintenance therapy consisted in both groups of daily oral 6-MP (60 mg/m²) and weekly oral MTX (30 mg/m²). Treatment was discontinued after 30 months.

B. Results

The clinical course of 81 standard risk and 68 high risk patients is given in Table 2. In

Fig. 3, the life table analyses of the entire group, the standard risk group, and the high risk group are given. The 36 months probability of surviving in continuous com-

Table 2. Clinical course

Groups	Total	Standard risk	High risk
Number	149	81	68
Nonresponders	1		1
Early deaths	7	4	3
Deaths during remission	5	1	4
CCR patients	118	68	50
Marrow relapses	12	6	6
CNS relapses	4	1	3
Testes relapses	2	1	1

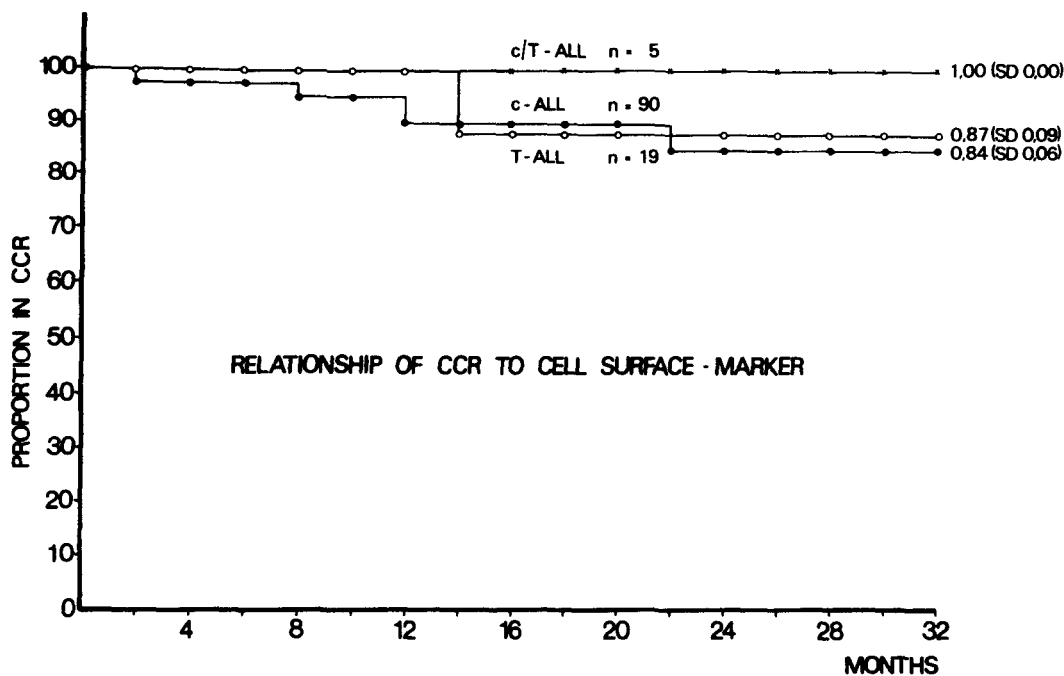


Fig. 4. Life table analysis of probability of continuous complete remission according to cell surface markers

Table 3. Clinical findings and cell surface markers

Groups	c	c/T	T	AUL
Number of patients (124 total)	90	5	19	10
Boys	41	5	15	7
Mediastinal mass	3	0	9	1
Leukocytes $\times 10^3$	38.6	13.6	93.6	73.2
Number $> 25\ 000$	27	2	11	4

plete remission is 84% for all patients, 97% for standard risk and 72% for high risk patients. The subtypes of ALL according to surface markers [3, 8] are given in Table 3. In Fig. 4, a comparison of the probability of continuous complete remission for patients with different ALL surface markers is given.

C. Conclusion

As compared with our former study 77-01 [4] these data suggest that the duration of

hematologic remission in all patient groups could be improved by intensification of the consolidation therapy by intermediate dose MTX. It could also be shown that the use of MTX and radiation therapy was effective for prevention of CNS leukemia.

References

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