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Long-Term Follow-up After Therapy Cessation in Childhood Acute Lymphoblastic Leukemia

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A. Introduction

The duration of complete remission (CR) after cessation of treatment is regarded as the only criterion of cure in ALL patients. Most authors agree that patients with stable remission 4 years after termination of therapy can be regarded as cured. Relapses after 4 years are extremely rare [1–5].

B. Patients and Methods

The subject of the present analysis was a group of children with ALL in whom complete remission had persisted for over 4 years after therapy cessation. The follow-up ended on Dec. 31, 1984.

Among 1230 children with ALL treated by the Polish Children's Leukemia/Lymphoma Study Group, treatment was withdrawn for 371 after long-standing CR. For 111 children from this group CR persisted for more than 4 years after therapy withdrawal. This group consisted of 62 boys and 49 girls. The age of the children at the time of ALL diagnosis ranged from 6 months to 15 years. At the time of diagnosis risk factors were found in 53 of the 111 children.

Treatment methods varied, depending on the time of the diagnosis and the therapy routinely used at that time [6, 7]. Treatment was stopped for 103 children during the first long CR. Eight children had extramedullary relapses before the therapy was stopped. In two patients relapses involved the testes, while six had CNS relapses.

C. Results

When therapy methods were intensified the percentage of children achieving long-term remission increased. It rose from 2.1% at the

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Table 1. Methods of treatment for ALL in children

Methods of therapy	Number of patients	Patients with over 4 years' remission after therapy cessation	
		Number	Percent
Zuelzer's	522	11	2,1
Varied, gradually intensified	349	21	6
Intensive chemotherapy + irradiation	359	79	22
Total	1230	111	

time of monotherapy to 22% when polychemotherapy with CNS irradiation was introduced (Table 1).

In the group of 111 children remaining in remission for over 4 years after treatment cessation, the period of follow-up measured from the time of diagnosis ranged from 6 to 26 years. The follow-up from the moment of treatment cessation varied from 4 to 18 years (Fig. 1).

In only one case, 54 months after treatment had been stopped, was testicular infiltration observed. The other 110 children are disease-free long-term survivors.

Height retardation was recognized in only two children. The long-living ALL patients lead normal lives. The children of school age are continuing their education. The adults are either working or still studying. Twenty children had learning difficulties connected with mathematical thinking or memory retention.

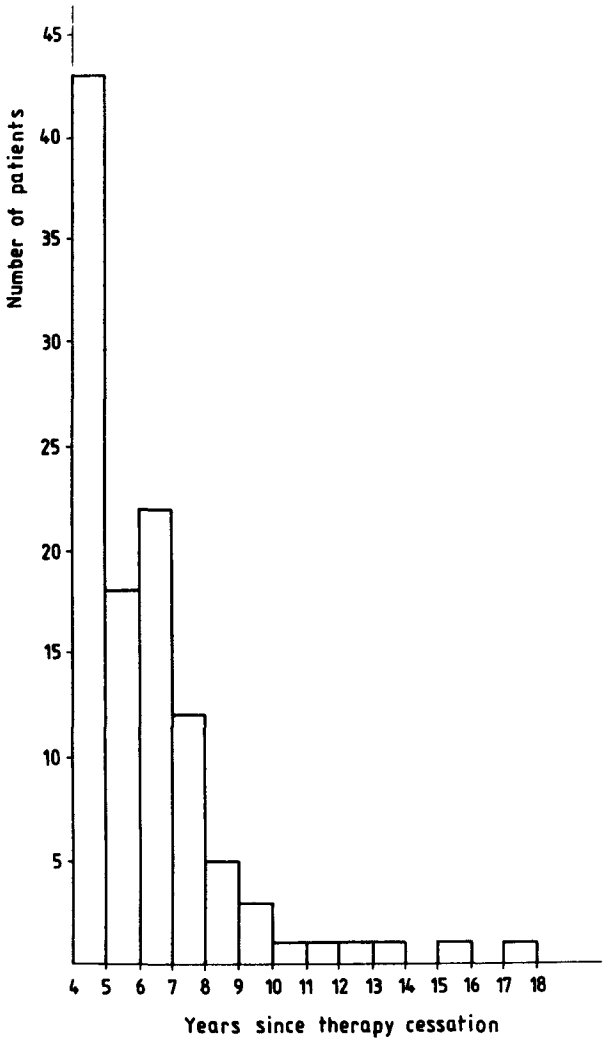

Fig. 1. Duration of follow-up after cessation of therapy in 111 children with ALL

In a majority of the patients no permanent internal organ damage has been noticed. In one case hepatic cirrhosis was discovered and in another schizophrenia.

Menstruation in all the women is normal. Seven persons, three male and four female, have healthy children who were born between 3 and 16 years after termination of ALL treatment.

We observed no secondary neoplasm in any case.

D. Conclusions

1. Intensive polychemotherapy combined with CNS irradiation resulted in a considerable increase in the percentage of cured ALL patients.
2. Long-lasting remission after treatment cessation was possible, not only in children in the first remission but also in those who suffered an extramedullary ALL relapse.
3. Risk factors lose their prognostic value in long-lasting survival for female patients but not for male patients.
4. Patients with ALL who underwent long treatment had no visible deviations in physical development and no permanent internal organ lesions.
5. ALL patients are able to have progeny and lead normal lives.

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