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## EFFECTS OF TREATMENT IN CHILDHOOD MALIGNANCY

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Late effects of surgery have been known for centuries. Late effects associated with radiation therapy were identified early in 1903 irradiated one wing of chicks, and noted the development of that part as the animal matured. Radiation was recognized that any rapidly proliferating, immature tissue is vulnerable to radiation damage. Since this describes most of children, it became obvious that growth of any organ could be affected in its growth by irradiation. It was soon found that more stable tissues and organs also could show late effects when no disabilities were identified in the immediate post-treatment period. Pulmonary fibrosis is an example.

These effects were known to chemotherapists as they used anticancer drugs. They discovered that while many drugs were effective, some had organ-specific toxicities as well; e.g., bladder fibrosis and contraction after cyclophosphamide.

Therefore, it has been known that certain chemotherapeutic agents interact with radiation therapy. Both immediate and late radiation effects can be enhanced and reactivated by the subsequent use of such drugs as actinomycin D and Adriamycin. It is no longer correct to speak of damage caused by any single agent. Interactions of the three major forms of therapy must now be considered in planning treatment. The late consequences of such therapy are of two major types: (1) Functional impairments and organogenesis. (1) Growth and development, the gonad, and the three organ systems that cause the most concern to pediatric oncology. Damage to paired organs is not so ominous for parents, but in the mind of the treating physician. (2) Both benign and malignant tumors can develop. Some of the cancers are secondary and, in-born predispositions (e.g., genetic retinoblastoma) are directly attributable to the treatments given.

The challenge in pediatric oncology remains to achieve cure by using the most effective treatments available, while adjusting their use so as to minimize disabilities.

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## HAIR ZINC ANALYSIS IN THALASSEMIA AND GEOPHAGIA

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In this study, hair zinc levels had been investigated in thalassemia and geophagia cases. It is previously reported that chronic zinc deficiency exist these two disorders. Hair has the advantages of relatively high trace element concentrations and of the ease with which adequate amount of tissue can be obtained without trauma. Furthermore, if the trace elements in hair are at anytime in equilibrium with meaningful body stores, hair analysis should be able to provide an integrated value reflecting the nutritional status over an extended period of time. Serum and plasma levels of several trace elements are strongly influenced by hormonal status, these influences often override nutritional status as determinant of concentrations.

We measured hair zinc levels in 55 Beta-thalassemia major and 39 geophagia patients in our study. Hair zinc levels of the patients were found statistically lower compared to the control group (Table 1).

These results showed that hair zinc level is a valuable and reliable indicator for the diagnosis of zinc deficiency.

TABLE 1 HAIR ZINC LEVELS IN THALASSEMIA AND GEOPHAGIA (ug/g)

	THALASSEMIA	GEOPHAGIA	CONTROL GROUP
X	120.93	119.99	193.40
sd	62.90	59.50	53.10
SX	8.48	9.52	8.39
n	55	39	40
P	0.001	0.001	