



Pediatric Clips

Treatment for acute lymphocytic leukemia (ALL) in adolescents By Emmett H. Broxson, Jr, MD

August 2009 • Volume 7 • Issue 4

Pediatric Clips from The Children's Medical Center of Dayton are quick reviews of common pediatric conditions.

The Children's Medical Center of Dayton is the region's pediatric referral center for a 20-county area. As the only facility in the region with a full-time commitment to pediatrics, Dayton Children's offers a wide range of services in general pediatrics as well as in 35 subspecialty areas for infants, children and teens. We welcome your inquiries about services available – call 937-641-3666 or e-mail marketing@childrensdayton.org.



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CASE STUDY

An 18-year-old male presents with fatigue, pallor and easy bruising. You obtain a CBC with differential that shows a WBC of 56,000,

Hgb of 7.5 Gm/dl and a platelet count of 15,000. The differential is remarkable for 46% blast. His examination shows pallor and

marked bruising. What is the best way to treat this patient?

CASE DISCUSSION

We know that adolescent young adult (AYA) population differs in incidence, types of malignancies as well as prognosis when compared to the younger children or older adults. There are approximately three times more patients diagnosed during the second 15 years of life as there are in the first 15 years. Based on surveillance, epidemiology, and end-results (SEER) data, the incidence for cancer in the 5-to 9-year-old group is 116 per million in the US. This increases to 213 for the 15-to19-year-old group and 337 per million for the 20-to 24-year-old group.

The common types of malignancies change with age. We see more acute lymphocytic leukemia (ALL) and brain tumors in the younger children, 25% and 21%, respectively. In the AYA population 19% of the malignancies are Hodgkin disease and 14% are germ cell tumors, while only 6% are ALL.

For the less than 10-year-old group with ALL who present with a WBC less than 50,000, we see a 90% or greater five year event-free survival (EFS). For the older patients we see a 75-80% five year EFS. There are many factors that play a role here, such as biology, psychosocial issues and treatment approaches.

Biologically, the AYA group of patients with ALL have a higher incidence of precursor T-cell immunophenotype, higher hemoglobin levels at diagnosis and a lower incidence of lymphomatous features at diagnosis. The AYA group has a lower incidence of favorable cytogenetics, such as t(12;21)(p13;q22) translocation and hyperdiploidy. There is an increasing incidence of the Philadelphia chromosome with age and is present in 5-7% of the AYA patients. The Philadelphia chromosome is associated with a very poor prognosis.

Psychosocially, the AYA group is invincible and independent. We see delays in diagnosis that may be due to the feelings of invincibility or lack of insurance. Also there are progressively more carcinogenic exposures and there are lifestyle habits that may affect the incidence and biology.

Once a patient is in a health care system there are different treatment approaches. One of the major concerns has been the lack of AYA patients enrolled in clinical trials to treat them in a consistent fashion. We know that the pediatric clinical trials groups have made their great strides in improving survival by enrolling almost all children on

clinical trials so that children across the country are treated similarly. There are several studies that suggest treatment after pediatric protocols that modify treatment based on presenting feature and biology provide better outcomes. These protocols provide tailored therapy, are more intensive and provide longer courses of therapy than adult type therapy.

A recent study, Stock, et al, looked at 16-to 20-year-old patients treated on Children's Cancer Group (CCG) protocols by pediatricians vs those treated on Cancer and Leukemia Group B (CALGB) protocols by adults between the years 1988 and 2001. The seven year EFS (CCG 63% vs CALGB 24%, P<0.001) and OS (CCG 67% vs CALGB 46%, P<0.001) rates were significantly better for patients treated on CCG clinical trials.

Other studies from France, Finland, Turkey and Spain have confirmed that for the AYA patient with ALL, treatment on pediatric protocols at pediatric centers do better than those not treated on clinical trials or those receiving adult type ALL therapy not on protocol.

The oncology program at Dayton Childrens is a member of the Chil-

Continued from the front.

dren's Oncology Group—the successor to CCG. Essentially all pediatric oncology programs in the US belong to this NCI sponsored clinical trials group. The therapeutic plans for ALL are based on biology as well as early response to therapy. The most recent completed study for the AYA patient population had a seven year EFS of 80%. We also provide the much needed psychosocial support for the AYA patient.

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FEATURED SPECIALIST



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care for patients up to age 21. The department is one of the few pediatric programs in the nation to be accredited by the American College of Surgeons Commission on Cancer. The hematology/oncology team provides a multidisciplinary approach to ensure that every child's medical and psychosocial needs are met. To make a referral or speak with someone in hematology/oncology, call 937-641-3111.



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