**583** SERUM FREE POLYAMINES (SFPA) LEVELS IN CANCER PATIENTS. R. A. Campbell, F. Bartos, D. Bartos, D.P. Grettie, and A.M. Dolney. Spon. by R.C. Neerhout. University of Oregon Health Sciences Center, Department of Pediatrics, Portland, Oregon.

Elevated urinary polyamines have been demonstrated in a variety of untreated clinical cancers. SFPA levels in 20 lambda native serum samples obtained from normal (N) and cancer (CA) patient specimens were determined by anti-spermine antibody radio immunoassay (RIA). Levels of PA are expressed as nanogram of free spermine base per ml of fluid.

| | Study Group | Range | n | $\bar{x}$ | SE |
|---|---|---|---|---|---|
| I | N. Children | 10-92 | 75 | 45.9 | 2.1 |
| II | N. Adult | 15-95 | 74 | 44.0 | 2.7 |
| III | CA. Children | 47-850 | 16 | 206 | 49 |
| IV | CA. Post Mastectomy | 45-171 | 12 | 105 | 12.9 |
| V | CA. Adult Female | 17-150 | 9 | 95 | 41.6 |
| VI | CA. Adult Male | 41-990 | 12 | 196 | 78.4 |

Values as high as 30 times normal have been encountered in pediatric and adult age cancer patients, occasionally in those classified as in remission. All CA patients were unselected, the opportunity for study occuring at various stages of diagnosis, clinical course and therapy. Nevertheless, intergroup comparisons of CA and N subjects revealed p values of 0.05 or less in all analyses. Preliminary results from a prospective study of newly diagnosed (untreated) lung cancer patients, n=8 demonstrated 7/8 with elevated SFPA values. SFPA elevations appear to be the rule in patients with a variety of liquid and solid tumors.

**584** ERYTHROCYTE ACID PHOSPHATASE: AN ANALYSIS OF RELATIONSHIPS WITH SOME NEONATAL VARIABLES. E. Carapella, J. Mortera, P. Lucarelli, F. Gloria-Bottini, R.M. Corbo, R.Pascone, E. Nervegna, and E. Bottini (Spon. by C.D. Cook). Dept. Genetics, Univ. Camerino; Dept. Pediatrics and Child Health,Univ. Rome; CNR Center Evol. Genetics, Rome.

Previously we reported a relationship between mean serum bilirubin levels (SBL) during the first five days of life and erythrocyte acid phosphatase (ACP) phenotype (ph) where the CA phenotype showed the highest mean SBL. Further data on the same series of consecutive newborns studied are reported in the table.

| ACP ph | Birth Wt. Kg. | Gest. Age Weeks | Plac. Wt. Kg. | Mean SBL mg % | Max. SBL mg % | 1st day of SBL mg % | Newborn No. |
|---|---|---|---|---|---|---|---|
| A | 3.37 | 40.5 | .58 | 5.2 | 7.6 | 3.5 | 19 |
| B | 3.29 | 39.8 | .57 | 5.1 | 7.7 | 3.2 | 112 |
| AB | 3.33 | 40.2 | .55 | 5.1 | 7.9 | 3.1 | 79 |
| CB | 3.40 | 40.5 | .56 | 4.5 | 6.8 | 3.0 | 13 |
| CA | 2.70 | 37.7 | .48 | 6.5 | 9.6 | 4.1 | 7 |
| All ph | 3.30 | 39.9 | .56 | 5.1 | 7.8 | 3.2 | 230 |

Variance analysis shows F values significant at 0.05 level for gestational age and mean SBL. Correlation analysis shows a correlation coefficient of 0.18 between gestational age and mean SBL. Further analysis shows that the relationship among ACP ph, gestational age and mean SBL have comparable strength. Therefore the effects of CA ph on SBL may depend on the action of the former on gestational age.

**585** COMPARISON OF ERYTHROCYTE SEDIMENTATION RATES IN THREE GROUPS OF CHILDREN WITH SICKLE CELL DISEASE (INTER-CRISIS, CRISIS AND INFECTION). Kenneth P. Carlson, Tito C.M. Sobrinho Audrey K. Brown, Department of Pediatrics, S.U.N.Y. Downstate Medical Center, Brooklyn, New York.

It is widely believed that erythrocyte sedimentation rate (ESR) determinations are of little value in sickle cell disease since the rate is comparatively slow. Using the Westergren method, uncorrected, we performed ESR's in 44 children with sickle cell disease during painful crises, periods of infection and during inter-crisis visits when they were otherwise well. Comparison of these three groups revealed that in 19 children with sickle cell disease the average ESR was 7.9 mm (range 3-21 mm) during inter-crisis periods. In 10 of 12 children with proven infection, the ESR was above 20 mm (average 38.3 mm), while among 13 children with painful crises the ESR was above 20 mm in only 5 (average 21 mm). The average values in patients with painful crisis or with infection were significantly higher than those in the inter-crisis periods. In general, the ESR's were higher in children with infection than in those experiencing painful crises. There was no relationship between the ESR in these patients and the degree of anemia. The findings suggest that an elevated ESR (above 20 mm) is a useful diagnostic parameter suggesting infection in patients with sickle cell disease.

**586** HYPEREOSINOPHILIC SYNDROME (HES) WITH CHROMOSOME 14 MARKER AND BONE MARROW LYMPHOBLASTS. Robert Chilcote, Eugene Pergament, Judy Mikuda, Roberto Kretschmer, Bangaru Jayalakshmamma, Ameeta Bamzai, Michael Miller. Pritzker School of Medicine, University of Chicago, Michael Reese Hospital and Medical Center, Department of Pediatrics, Chicago

The HES is characterized by persistent eosinophilia and significant organ damage and is likely of diverse etiology. The relationship of HES to leukemic disorders has been particularly difficult to clarify. We report a case of HES presenting with an eosinophil count in excess of 100,000/$mm^3$, congestive heart failure and bone marrow - but not peripheral blood - lymphoblasts. Parasitic and isohemagglutinin titers were not elevated; IgE was normal. Bone marrow blasts were separated from eosinophils by density gradient and tested for cytologic, immunologic and chromosomal markers. Lymphoblasts possessing neither T nor B cell markers were identified. Quinacrine band fluorescence preparations disclosed that 86% of the metaphases from the bone marrow lymphoblasts contained an extra C group chromosome and a marker chromosome 14 (14 $q^+$). Stimulated and unstimulated peripheral blood chromosomes were normal. Eosinophils and lymphoblasts disappeared under Vincristine, prednisone and l-asp induction therapy. Chromosome 14 anomalies have been associated with other lymphoproliferative disorders, such as Burkitt's lymphoma, ataxia-telangiectasia and lymphosarcoma, but not myeloproliferative states. Our results suggest that a "null cell" ALL-like lymphoproliferative disorder with chromosome 14 marker can induce the HES.

**587** CIRCULATING COLONY-FORMING CELLS IN CHILDHOOD LEUKEMIA. Jen-Yih Chu, Philip Freiling, Dennis O'Connor and Arthur McElfresh. St. Louis University School of Medicine, Cardinal Glennon Memorial Hospital for Children, Department of Pediatrics, St. Louis, Missouri.

Serial in vitro agar culture of peripheral blood was performed in children with acute leukemia in various stages of disease. In acute lymphocytic leukemia, in contrast to the depressed colony-forming cells (CFC) in the bone marrow, circulating CFC were greatly increased in untreated patients and patients in relapse. CFC returned to normal after successful remission induction and while on maintenance therapy. Depressed CFC in marrow and continuous increased CFC in blood after vincristine and prednisone induction may indicate incomplete remission in spite of morphological criteria of remission. An increase of CFC in peripheral blood was also observed transiently during the early phase of recovery from marrow depression by either infection or chemotherapy. An increase in circulating CFC, before clinical and peripheral blood evidence of relapse, has been observed in one patient off therapy for 11 months. Patterns of in vitro growth may also help to distinguish different types of leukemias, especially the undifferentiated leukemias which fail to demonstrate cytochemical markers. A pattern of CFC and colony-stimulation activity similar to "preleukemia" in adults was also observed in children with Fanconi's aplastic anemia. In conclusion, we believe agar culture of peripheral blood, as well as bone marrow, to be useful in diagnosis, confirming the completeness of remission, and assessing prognosis in children with leukemia.

**588** PREDICTION OF PROGNOSIS IN APLASTIC ANEMIA BY FERROKINETIC STUDIES. Elfrid Cifuentes, Thomas R. Kinney, Frances M. Gill, and Elias Schwartz. Univ. of Pa. Sch. of Med., The Children's Hospital of Phila., Dept. of Peds.

Criteria are needed to identify at diagnosis patients with idiopathic aplastic anemia (AA) who have a poor prognosis, since early bone marrow transplantation may improve their survival. In the past 4 yrs we have studied 11 patients, aged 2-14 yrs (median 7 yrs), with AA. All had pancytopenia and aplastic or markedly hypoplastic bone marrows. In addition to the usual hematologic evaluation, studies with $^{59}Fe$ were done to measure plasma Fe clearance (FeC) and Fe utilization (FeU). All patients were treated with androgens and received supportive care. Six have died (median survival 8 mos). The others have improved and have a median survival of 25 mos. Significant differences between survivors and nonsurvivors were found in initial absolute reticulocyte counts (ARC)($p< 025$), absolute neutrophil counts (ANC) ($p<.005$), and % FeU ($p<.002$). Values for nonsurvivors were ARC $1.35\pm0.28(\times10^{10}/1)$,ANC $3.48\pm0.76(\times10^{8}/1)$, and % FeU $8.0\pm3.3$ (mean ± S.E.M.). Survivors had ARC $3.11\pm0.84$, ANC $7.03\pm1.14$, and % FeU $48\pm14$. RBC, WBC, and platelet levels had no predictive value for long term survival. Plasma FeC was prolonged in all, reflecting poor Fe uptake. Of 7 patients who had ARC less than 2.5, ANC less than 5.0 and less than 25% FeU, 6 died. FeU studies characterize the total erythropoietic capacity of the marrow better than aspiration, which is subject to sampling error. These data suggest that poor FeU at diagnosis of AA should be used as one criterion for early bone marrow transplantation.