SCREENING A NEWBORN POPULATION FOR HEMOGLOBIN SS BY QUANTITATIVE IMMUNODIFFUSION. Suresh B. Shukla and Verle E. Headings (Intr. by Roland B. Scott). Howard University College of Medicine, Freedmens Hosp., Dept. of Ped. and Ctr. for Sickle Cell Disease, Washington, D.C.

This study was undertaken to evaluate a simple and efficient radial immunodiffusion test system for quantifying hemoglobins S and F in cord blood of newborn infants. In earlier studies specific goat anti-S and specific rabbit anti-F sera were shown to be adequate for quantifying hemoglobins S and F in mixed proportions simulating those anticipated in newborn infants with hemoglobin AS or SS. To date 107 cord blood specimens from black infants have been tested for relative quantities of hemoglobins S and F. The mean relative quantity of F was $86.3\% \pm 10.6$ S.D. In 15 of these specimens S was detected with a mean relative quantity of $6.3\% \pm 2.5$ S.D. This technique presently can serve as a convenient screening device with identification of SS among positives by the more cumbersome agar gel electrophoresis technique. Continuing work will compare the percent concordance between diagnoses of AS and SS by these two methods.

NEW ROLE FOR SERUM FERRITIN (SF) IN IRON METABOLISM.

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This study was designed to determine the origin of SF and its turnover in the rat and in man. The concentration of SF was measured by radioimmunoassay. ^{59}Fe in SF during kinetic studies was measured after ultracentrifugal fractionation of plasma on a sucrose gradient, based on the greater molecular weight of ferritin compared with other iron containing components. After injection of heat-treated ^{59}Fe -RBC in rats, peak labelling of SF fraction was at 30 min; other ^{59}Fe in plasma, primarily transferrin-bound, was maximally labelled at 2 h. No labelling of the SF fraction was detected after injection of ^{59}Fe -transferrin in man or in the rat or after ^{59}Fe -hemoglobin-haptoglobin in the rat.

Purified rat liver ^{59}Fe -ferritin, injected intravenously in the rat, was removed by the liver at an exponential rate with a half-life of 4 min. The turnover of SF in man was estimated by an unusual approach, based on an 8-fold higher concentration in the newborn compared with the adult. SF concentration was measured in 10 ml increments of blood removed during 1.5 - 2.0 volume exchange transfusions of the newborn for hyperbilirubinemia. The decrease in serum SF during the 1 h exchanges was slow and of small magnitude. The rate of synthesis of SF was computed to correspond to a half-life as short as 5 min. The rapid turnover of iron in SF, compared with transferrin iron, suggests a quantitatively important role for SF in the transport of iron from the RE cell to the liver.

PHARMACOLOGICAL MANIPULATION OF 2,3 DIPHOSPHOGLYCERATE (2,3-DPG) LEVELS IN HUMAN ERYTHROCYTES. Alan B. Silken, Intro. by Howard A. Pearson, Dept. of Pediatrics, Yale Univ. Sch. of Med., New Haven, Conn.

2,3-DPG levels in 17 patients with nephrotic syndrome receiving chronic prednisone therapy (5162 ± 213 nmoles/ml rbc, mean $\pm$ S.E.M.) were significantly higher than in 20 controls (4527 ± 146) with nephrotic syndrome not receiving prednisone ($p < .01$). There was a significant correlation ($r = .8826$) between dose and 2,3-DPG level. The acute effect of prednisone was studied in 10 patients with acute leukemia in remission undergoing prednisone and vincristine reinduction. A 21% increase in 2,3-DPG ($p < .02$) was demonstrated 3 weeks after starting prednisone, which returned to pre-treatment levels 2-3 weeks after therapy was discontinued. (See Table)

Before Therapy	Prednisone Therapy			Off Therapy 2-3 Wks
	1-2 Wks	3 Wks	1 Wk Taper	
5183 $\pm$ 316	6092 $\pm$ 439	6286 $\pm$ 189	5509 $\pm$ 77	4815 $\pm$ 199

No significant changes occurred in hemoglobin or serum inorganic phosphate levels during prednisone therapy. Three patients treated with vincristine alone demonstrated no change in their 2,3-DPG levels. Since an elevation in 2,3-DPG of 430 nmoles/ml rbc results in an increase of P50 of 1 mm. Hg, this study provides evidence that Hb-O₂ affinity can be pharmacologically manipulated in the direction of significantly increased oxygen delivery to tissues, and that this effect is time and dose related.

CESSATION OF THERAPY DURING REMISSION IN CHILDREN WITH ACUTE LYMPHOCYTIC LEUKEMIA (ALL). Joseph V. Simone, Rhomes Aur, Manuel Verzosa, Omar Hustu, and Donald Pinkel, St. Jude Children's Res. Hosp., Memphis, TN.

Combination chemotherapy and preventive central nervous system (CNS) therapy for childhood ALL have resulted in 5-year leukemia-free survival in about one-half of the patients. However, the risk of side effects and fatal infection is significant so chemotherapy was stopped after 2-3 years of complete remission.

Therapy was stopped in a total of 123 patients with ALL; 104 were in initial complete remission, 19 had relapsed at least once. All were treated with similar chemotherapy but differing preventive CNS therapy. None of 7 patients given 500 or 1200 rads to the craniospinal axis has relapsed after 5-7 years. Of 8 patients given no preventive CNS therapy, 6 relapsed after stopping therapy, 5 with CNS involvement. The remaining patients received 2400 rads to the cranium with intrathecal MTX or 2400 rads craniospinal irradiation. Of 85 patients irradiated between 1967 and 1970, 10 have relapsed, all in the first year and most of the remainder have been off therapy 2 years or more. Of 23 given irradiation in 1970-71, 2 have relapsed. Thus, the frequency of relapse is 12 of 115 in patients who received preventive CNS irradiation and 6 of 8 given no preventive therapy.

We conclude: 1) in children with ALL given preventive CNS therapy and combination chemotherapy who remain in complete remission for 2-3 years, about 10-12% relapse after stopping therapy and 2) the risk of relapse after stopping therapy is greatest in the first year and is greater in patients given no preventive CNS therapy. (Supported by NCI Grant CA-08480 and ALSAC).

RESPONSE TO CORTICOSTEROID THERAPY IN IDIOPATHIC THROMBOCYTOPENIC PURPURA. Steven M. Simons, Charles A. Main, Hassan M. Yaish, and Julius Rutzky, (Intr. by Paul V. Woolley, Jr.) Wm. Beaumont Hosp., Royal Oak, Mich. and Wayne State Univ. School of Med., Detroit, Mich.

57 of 105 cases of idiopathic thrombocytopenic purpura (ITP) were seen during the first two weeks of illness and evaluated for response to therapy and early indicators of chronicity. The high incidence of chronicity among children over ten years of age (67%) was significantly different (p less than .01) from the corresponding incidence for children ten years of age and younger (4%). This difference was unrelated to sex, initial platelet count, precipitating factor or therapy. Among the 48 patients ten years of age or younger, early corticosteroid therapy, for considerations believed to represent increased risk, resulted in a significantly greater portion of the treated group (33%) achieving remission before two weeks from onset than of the untreated group (5%), (p less than .05). The difference was apparent when time to remission was calculated from the historical onset of symptomatology rather than from time of presentation. Incidence of chronicity was not significantly different (p greater than 0.5) between these groups. Of 7 chronic patients who responded to steroids initially and then relapsed, all had some response to a subsequent course. No chronic patient treated with corticosteroids alone had a sustained remission. 8 of 11 (73%) chronic patients had a sustained remission after splenectomy.

JET INJECTION OF LOCAL ANESTHESIA FOR BONE MARROW ASPIRATIONS. Karen A. Smith, James A. Stockman and Marie J. Stuart (Intr. by Frank A. Oski). State University of New York, Upstate Medical Center, Syracuse, New York.

Jet injection of anesthesia has been employed for dental procedures and is said to be associated with less pain than needle and syringe techniques. To determine its usefulness for bone marrow aspirations, the Syrijet-Mark II was used to deliver 0.35cc of 2% zylacaine at 2600 psi to the posterior iliac crest in 50 aspirations on 27 subjects, ages 4-17, with leukemia. A comparison was made with prior marrow aspirations using 25g needle and 2-3 cc of 2% zylacaine to skin and periosteum. In this group, the periosteal depth (skin to bone) was 3-15mm (mean 7). Skin wheals varied from 0-10mm (mean 4.7). In 22/50 procedures (44%), no pain was felt; in 22/50 slight pain (44%) was felt but less than with needle injection; in 6/50 (12%), pain equivalent to the needle technique occurred and in none was more pain felt. On insertion of the bone marrow needle through skin in 41/50 procedures (82%), no pain was felt and in 9/50 (18%), mild pain only. On insertion of the needle through periosteum into bone, no pain or significantly less pain than with needle injection was felt in 31/50 procedures (62%); equivalent pain occurred in 16/50 (32%); and more pain in 3/50 (6%). In only 4/50 patients (8%), was the non-jet technique preferred. Skin wheal size and periosteal depth had no relationship to patient response. Jet injection of anesthesia is rapid and effectively relieves the pain of marrow aspirations.