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NEONATAL HOMOVANILLIC (HVA) AND VANILLYLMANDELIC (VMA) ACID LEVELS IN URINE SAMPLES COLLECTED ON FILTER PAPERS. Mendel Tuchman, Leslie L. Robison, Edward J. Fisher and William G. Woods. University of Minnesota Department of Pediatrics and Park Nicollet Medical Center, Minneapolis

Neonatal urinary HVA and VMA (neuroblastoma markers) levels in filter paper samples were determined as part of a feasibility study on screening for neuroblastoma. Urine samples from 531 neonates were absorbed from diapers onto absorbent filter papers at the age of 2-144 hours. The samples were dried in room air and mailed to the laboratory. Urinary compounds were eluted from a 20 Cm^2 section of each filter paper, an aliquot was used for urinary creatinine (UCr) determination by the Jaffe reaction and HVA and VMA were determined by automated capillary gas-chromatography. Mean UCr levels were higher before the age of 36 hours than after 36 hours (p=0.07). Mean HVA levels were lower before 24 hours than after 24 hours (p=0.02). Mean VMA levels were higher before 24 hours than after 24 hours (p=0.006) and before 36 hours compared to after 36 hours (p=0.006). No positive neuroblastoma cases were identified during this study, as expected.

age (hrs)	No	%	UCr(mg%)[1,2]	HVA(µg/mgUCr)[2]	VMA(µg/mgUCr)
1-12	48	9	3.6 ± 2.2	18.1 ± 10.1	22.6 ± 11.4
13-24	159	30	4.5 ± 4.2	18.6 ± 9.4	22.1 ± 11.8
25-36	140	26.4	4.2 ± 3.6	20.4 ± 9.9	20.3 ± 13.1
37-48	108	20.3	3.9 ± 3.1	21.0 ± 9.5	18.7 ± 11.0
49-72	57	10.7	3.6 ± 3.1	20.4 ± 8.8	18.2 ± 13.5
> 72	19	3.6	2.9 ± 2.5	18.0 ± 10.8	16.3 ± 12.1
All	531	100	4.1 ± 3.5	19.7 ± 9.6	20.3 ± 12.2

1, estimated 5 fold dilution of the original sample
2, mean ± standard error

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UTILITY OF IMPEDANCE PLETHYSMOGRAPHY IN CHILDREN WITH CLINICALLY SUSPECTED VENOUS THROMBOEMBOLIC DISEASE. Chris Turner, Maureen Andrew, Russell Hull, Gerry Gill, Jack Hirsh, (Spon. by Jack Sinclair). McMaster Univ., Chedoke-McMaster Hospital, Depts. of Ped., Med. and Rad. Hamilton, Ont. Children with suspected venous thromboembolic disease are not uncommonly seen in pediatric referral centres. The only objective test widely accepted in pediatrics for the assessment of deep vein thrombosis (DVT) is venography. Impedance plethysmography (IPG) has been proven safe in adults. We have performed a feasibility study of clinical use of IPG in children with suspected DVT. We studied 14 consecutive patients who presented with pain, swelling or erythema of a lower extremity. Their ages ranged from 7-18 yrs. with a median of 16 yrs and a mean of 15.5 yrs. We performed IPG on both legs using the technique described in adults. Only patients with positive(+) IPG underwent venography. All three patients with +IPG had venogram-confirmed DVT. Deficiencies of proteins C&S, AT III and plasminogen were not found. The patients with negative(-) IPG were followed with repeat IPG at days 0, 1, 3, 5, 7 and 10. The IPG remained (-) in these patients. None of the 11 patients with (-)IPG subsequently developed clinical evidence of DVT. Large trials in symptomatic adults have demonstrated that IPG may replace venography. Although no technical problems were encountered with IPG in our patients, there are 2 potential problems in using IPG in children: (1) patient cooperation in small children; (2) the use of adult-sized cuffs in small children. It should be possible to overcome the latter by modifying cuff size. We feel a larger experience with the use of IPG in children with symptoms or signs of DVT is required. We conclude that IPG which has been validated in adults, has utility in the diagnosis of venous thromboembolic disease in children.

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RED CELL CHANGES IN NEONATAL SEPSIS. Chris Turner, Elizabeth J. Brown, Barbara Schmidt, Annette Poon, Alvin Zipursky, Univ. of Toronto, The Hospital for Sick Children, Div. of Hematology, Dept. of Peds., Toronto, Ont. The association of anemia with sepsis in newborns has been suspected for some time. There is little documentation of this association or of its pathophysiology. We studied red cell morphology in newborn infants with clinically suspected septicemia to determine if there are significant changes in red cell shape in association with sepsis in neonates. Red cell morphology has previously been examined using standard dried blood smears. We examined red cell morphology using erythrocyte differential counts (EDC) obtained by 3-dimensional red cell assessment using glutaraldehyde-fixed erythrocytes. Forty babies in a tertiary care nursery were studied. 75% were prematures. Blood cultures from 25 babies with suspected sepsis produced significant bacterial growth (68% S.epi.). Abnormal EDC's were found on examination of red cells from 12 babies. Positive blood cultures were found in 11 of 12 baies with abnormal EDC's. 8 of 12 abnormal EDC's showed increased % of echinocytes (26-56% in 6 prematures; & 7&26% in 2 term babies). The 4 remaining abnormal EDC's were: increased spherocytes (7&11%); increased discocytes (72&73%). 10 of the 12 abnormal EDC's were from prematures. No significant association was found between abnormal EDC and asphyxia, hyperbilirubinemia, blood group incompatability, anemia at birth or prior blood transfusion. In conclusion, we have found an association between abnormal EDC and bacterial sepsis in newborns. The relationship of red cell shape changes to the pathophysiology of anemia in septic newborns remains to be determined. A larger experience in the use of EDC as a marker of bacterial sepsis in neonates is required.

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MEMORY FUNCTION OF CHILDREN WITH ACUTE LYMPHOCYTIC LEUKEMIA (ALL) WHO RECEIVED CNS PROPHYLAXIS (Px) WITH OR WITHOUT 18 Gy CRANIAL IRRADIATION (CrRT) Abby Wasserman, Raymond Mulhern, Diane Fairclough, Judith Ochs Spon. by Walter T. Hughes. St. Jude Children's Research Hosp., Memphis, TN

The potentially adverse effects of CNS Px upon neuropsychological function in survivors of ALL is of concern. Forty patients (pts) (mean age 10.6 yrs) with normal IQ's, with ALL, and no evidence of CNS disease at diagnosis were treated on Total X protocol (Proc. ASCO 5:632,1986) in which they were randomized to receive intrathecal methotrexate (IT) alone or with 18 Gy CrRT as CNS Px. Pts receiving only IT also had pulses of high dose MTX (1 gm/m^2) (HDMTX). All children remained in complete, continuous remission 3+ yrs after completing therapy (5 1/2+ yrs post diagnosis) and were entered on this study of memory function on an unselected basis until 20 evaluable cases in each group (IT alone or CrRT & IT) out of a total of 52 eligible pts were enrolled. On 25 memory and behavioral measures, no differences were detected between treatment groups and no age-related trends were noted. However, short-term ($p<.01$) and long-term ($p<.001$) verbal recall and visual-perceptual memory ($p<.01$) were lower for both groups than the general population. In summary, 18 Gy CrRT+IT does not appear to increase the neuropsychological deficits of children treated for ALL compared to similar children treated with IT and HDMTX; however, either method of CNS Px often affects selected areas of memory function. The ultimate impact of these findings on learning is unknown at this time and deserves further study.

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FAVORABLE PROGNOSIS FOR CHILDREN WITH APLASTIC ANEMIA TREATED WITH IMMUNOSUPPRESSIVE THERAPY. Eric J. Werner, Robert D. Stout, Leticia P. Valdez and Richard E. Harris, (Spon. by Maurice D. Kogut). Depts. of Ped. Wright State Univ. Sch. Med., Children's Med. Ctr., Dayton and Univ. of Cincinnati Sch. Med., Children's Hospital Med. Ctr., Cincinnati.

Survival rates for children with aplastic anemia (AA) who do not receive HLA-matched bone marrow transplantation (BMT) are less than 50%. In the past 5 years we have treated 9 patients (pts) with AA with immunosuppressive therapy (ImmRx); 8 pts are alive and do not require transfusion (Tx) with a median follow-up of 14.5 months (range 5-62). Seven pts had severe AA and 2 had moderate AA. AA was associated with hepatitis in 2 pts, benzene in 1 pt, arthritis in 1 pt and was idiopathic in 5 pts. All pts received anti-thymocyte globulin (ATG) 15 mg/kg/day for 14 consecutive days followed by 7 additional doses over the next 14 days. All pts received methylprednisolone or its equivalent at 1-2 mg/kg/day during the ATG to combat serum sickness. Two pts also received 1 haploidentical bone marrow infusion and oral androgens, 1 additional pt received oral androgens. Six pts (5 severe) had a good response to ATG and are Tx free. In one pt, persistent thrombocytopenia responded to cimetidine therapy. Of the 3 pts who failed ATG, 2 are Tx free after treatment with cyclosporine A. During the same time, 6 pts with severe AA had BMT with a complete response. The response to BMT was significantly faster than to ATG. Red cell Tx was required for 34 days post BMT vs. 66 days post ATG ($p<0.05$). In conclusion, although BMT is better than ImmRx in children with AA, when a suitable donor is unavailable, ImmRx may result in a favorable outcome.

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A RANDOMIZED, CONTROLLED STUDY OF HYPNOTIC AND NONHYPNOTIC BEHAVIORAL INTERVENTION FOR CHEMOTHERAPY-RELATED NAUSEA AND VOMITING. L.K. Zeltzer, S. LeBaron, and C. LeBaron. USC School of Medicine, Childrens Hospital of L.A., Behavioral Science Section, Div. of Hema/Onc, L.A., CA.

Hypnosis and nonhypnotic support were compared for effectiveness in reducing chemotherapy related nausea and vomiting for 60 chemotherapy combinations in 42 children with cancer. Patients were randomized to a hypnosis, support, or control group, and two matched baseline courses of chemotherapy were compared with two courses with intervention. The nausea and vomiting were reduced for the hypnosis group, with the largest reduction occuring for nausea duration ($p<.03$) and bother ($p<.01$). A reduction of > 8 hours in the duration of both nausea and vomiting occurred more than 3 times as often in the hypnosis group as in the control group. Unlike either of the intervention groups, 75% of the patients in the control group reported a 20% increase in the extent to which chemotherapy bothered them. In summary, nausea and vomiting, improved with hypnosis but did not improve with nonhypnotic support. The control group demonstrated a consistent worsening of all symptoms over time, indicating that children do not "get used to" chemotherapy. The findings indicate that behavioral intervention can modify chemotherapy related symptoms and reduce the extent to which treatment bothers children with cancer.