† **631** THE USE OF TOTAL BODY IMPEDANCE TO DETERMINE BODY COMPOSITION IN INFANTS W.J. Cochran, W.J. Klish, W.W. Wong, M.L. Fiorotto, P.D. Klein and B.L. Nichols. Baylor College of Medicine, USDA/ARS Children's Nutrition Research Center, Dept. of Pediatrics, Houston, TX.

Total body impedance (EMME or TOBEC instrument) has been introduced as a rapid, noninvasive device for the determination of fat-free mass (FFM) (J. Pediatr. Gastroenterol. Nutr. 3:199, 1984). The instrument operates on the principle that organisms placed in an electromagnetic field perturb it to a degree that depends upon the amount and volume of distribution of electrolytes. The body composition of infants was studied by this method. Compositional changes occur during growth; therefore an infant animal standard using this method was required. (The infant miniature pig was selected, because its size and composition approximate those of the human infant.) Fifteen infants (age, 2 d to 13 mo; wt, 2 to 9 kg) were analyzed by the impedance method. Total body water (TBW) was determined by the isotope dilution technique using deuterated water. There was a good linear correlation between TBW and the ln of the impedance signal ($r = .954$). FFM of the infants was calculated by TBW (FFM = TBW/.82) and by the impedance method using a standard previously derived from mature rabbits. TBW appeared to overestimate FFM which was greater than total body wt in 4 of 15 infants. FFM by the impedance method ranged from 54 to 91% of total body wt. Five pigs (wt, 2.3 to 4.7 kg) have been studied by impedance and chemical analysis. There was good linear correlation between the ln of the impedance signal and TBW by desiccation ($r = .995$). Conclusions: 1) an infant miniature pig growth standard is expected to improve the predictive accuracy of the impedance method, and 2) the impedance method is highly suitable for use with human infants and determines body composition more accurately than other available methods.

**632** LIVER BIOPSY IS SAFELY PERFORMED IN AN AMBULATORY/DAY HOSPITAL SETTING. Janna C. Collins, Hazel C. Chambers and Ira Greifer, Albert Einstein College of Medicine, Department of Pediatrics, Bronx, N.Y. (spon by M.I.Cohen)

So-called "outpatient" percutaneous liver biopsy is advocated for low risk adults. We assessed feasibility of pediatric liver biopsy in a short-stay program designed to reduce patient anxiety about hospitalization and minimize hospitalization costs.

27 of 86 pediatric liver biopsies were performed without overnight hospitalization. Criteria for "one-day" liver biopsy were (a) no other acute or chronic need for admission, (b) pro time$<$3 sec over control, platelets$>10^5$, (c) no anticipated bleeding problem. Outpatients NOT considered for "one-day" biopsy were on hemodialysis (6) required platelets, plasma or DDAVP pre-biopsy (4) or lived more than one hour from the hospital.

Sedation, usually IM DPT, was the same as for regularly hospitalized patients. Vital signs were closely monitored for six hours after the procedure, then patients went home with a parent to maintain bed rest for 24 hours.

Results: 9/27 liver biopsies were performed in conjunction with other procedures, usually endoscopy and mucosal biopsies. No complications occurred in this group. One infant, after receiving an excessive dose of demerol, was monitored for 12 hours before discharge. One patient remained overnight at parent request

Conclusions: In suitably selected pediatric patients, percutaneous liver biopsy can be accomplished without overnight hospitalization. There were no unrecognized complications requiring readmission. The hospital cost was halved and family lifestyle minimally disturbed.

**633** VALUE OF LIVER BIOPSIES IN THE DIAGNOSIS OF OPPORTUNISTIC INFECTION IN CHILDREN WITH AIDS. Janna C. Collins, Rachel Morecki and Arye Rubinstein, Albert Einstein College of Medicine, Departments of Pediatrics and Pathology, Bronx, New York.

Liver biopsies were obtained from 9 AIDS patients with fever of unknown etiology and hepatomegaly. All patients had prenatal or early neonatal acquisition of AIDS. All were HBsAg, anti-S and IgM-anti-HAV negative, although several mothers had evidence of hepatitis B infection. The age at time of biopsy was two mo. to six years, with a mean age of two years eight months.

M.avium/intercellulare (MAI) was identified histologically in four patients' liver while bone marrow aspirates revealed organisms in only one. Bone marrow culture subsequently confirmed the diagnosis of MAI in all four. Reactive changes in liver varied from the presence of isolated macrophages in sinusoids and portal tracts to aggregates forming ill-defined granulomas devoid of multinucleated cells or lymphocytes. Ziehl-Nielsen stain was necessary to identify organisms in the biopsies showing minimal tissue reaction. Distinction between M. tuberculosis and MAI was based on the abundant MAI within a given cell, their long filamentous shape and PAS affinity. No HBsAg was identified by Orcein staining.

Conclusions: Unlike adults with AIDS, these children had no evidence of hepatitis A or B infection. FUO and hepatomegaly in children with AIDS was often associated with atypical mycobacterial infection. Percutaneous liver biopsy is a rapid way to diagnose MAI, but requires use of an acid fast stain as a routine.

**634** FOLLOW UP OF VERY LOW BIRTHWEIGHT (VLBW) INFANTS FED OWN MOTHERS' MILK (OMM), A PREMATURE FORMULA (PF) OR ONE OF TWO STANDARD FORMULAS (SF). Peter A Cooper, Alan Rothberg. Spon. by M Jeffrey Maisels. Witwatersrand Univ, Johannesburg Hospital, Dept of Pediatrics, JHB, South Africa.

VLBW infants fed a PF in hospital grew more rapidly than those fed OMM or SF, while OMM-infants had the lowest serum phosphate (P) and highest serum alkaline phosphatase (AP) values during the 4-5 week study period (10/group). Infants were discharged on SF or breast fed (BF) when possible. During the subsequent 6 week period no differences in growth rates were noted but infants fed OMM and subsequently BF had significantly higher AP ($982\pm195$ vs $414\pm135$ IU/l, $p<0.001$) and lower P values ($1.50\pm0.27$ vs $2.21\pm0.30$ mmol/l, $p<0.001$) than those who had been on formula (F) throughout. OMM infants who subsequently received F were indistinguishable biochemically from the F groups. Single wrist X rays after 6 weeks, however, failed to demonstrate any intergroup differences. To date, 29 infants have been seen at a corrected age of 1 year. Growth data are as follows:

| | OMM (9) | SF 1 (8) | SF 2 (5) | PF (9) |
|---|---|---|---|---|
| Weight (g) | $8916\pm681$ | $9283\pm636$ | $9026\pm1274$ | $8749\pm740$ |
| Length (cm) | $74.0\pm1.8$ | $74.9\pm3.1$ | $74.1\pm2.2$ | $74.0\pm2.6$ |
| Head circ (cm) | $46.3\pm0.8$ | $46.3\pm0.8$ | $45.9\pm1.5$ | $45.5\pm1.4$ |

No clinical problems attributable to inadequate bone mineralisation (BM) were noted. Thus the initially improved growth seen in VLBW infants fed PF was no longer evident at 1 year, while the biochemical evidence for inadequate BM noted in OMM-fed infants did not appear to have long term effects. Griffiths developmental scores show no intergroup differences at 1 year.

† **635** AGE-DEPENDENT CHANGES IN BILIARY MOTILITY AND STRUCTURE. Kenneth L. Cox, Anthony T.W. Cheung, Carleton Lohse, Christine K. Iwahashi-Hosoda, Erin M. Walsh. Depts. of Pediatrics and Vet. Anatomy, and Primate Center, Univ of California, Davis, CA. (Sponsored by Michael Miller)

Age-dependent changes of the biliary tract may predispose to developing biliary tract disease. The purpose of this study was to determine the effects of aging on biliary motility and structure of male guinea pigs. Bile flow rates declined with increasing age and were greater when measured by volume of bile collected from the ampulla vs bile duct cannula:

| age | n | wt(kg) | Flow Rates(µl/min/kg) Ampullary | Common Bile Duct |
|---|---|---|---|---|
| <1 wk | 5 | 0.105±6 | 295±24 | 113±10 |
| 4-6 wks | 6 | 0.299±9 | 177±16 | 117±9 |
| >1 yr | 4 | 1.099±33 | 185±19 | 68±9 |

While fasting, intravital microscopy measured bile flow rates and documented rhythmic contractions of the sphincter ductus choledochi(SDC) at 4-6/min with associated narrowing of the proximal duct and filling of the ampulla until milking constrictions of the ampulla at 1-2/min emptied its contents into the duodenum. The newborn had incomplete closure of the SDC and a fold in the ampulla prevented filling of the distal ampulla until the entire duct was distended. Ten ml/kg of Ensure in the duodenum caused relaxation of the SDC and tonic contractions of the ampulla. Methylmethacrylate casts of the biliary system correlated structures with these functional components. In conclusion, bile flow rates decreased with aging and the sphincter of Oddi was propulsive with age-dependent changes in function and structure.

† **636** ACETYLSALICYLIC ACID (ASA) AND ACETAMINOPHEN (AAP) AS POSSIBLE CONTRIBUTORY FACTORS IN THE ETIOLOGY OF REYE'S SYNDROME. John F.S. Crocker, Sharon C. Digout, Spencer H. Lee and Kenneth R. Rozee. Dalhousie University and The Izaak Walton Killam Hospital for Children, Departments of Microbiology and Pediatrics, Halifax, Nova Scotia.

A mouse model of Reye's syndrome (RS), in which exposure to an emulsifier prior to Influenza B virus infection induced most of the biochemical and histologic features of human RS, was used to investigate ASA and AAP as initiators and enhancers of this syndrome. Mortalities of mice increased when ASA and AAP was given to 2 week old mice previously exposed to emulsifier and Influenza B ($p=0.02$ and $p=0.001$ respectively). In 5 week old mice, mortalities increased in mice infected with ASA coincident with administration of the drug but independent of the emulsifiers ($p=0.01$). In vitro work with MDCR (dog kidney) cell cultures were used to study the cytotoxic effect of ASA and AAP on Influenza B infection. Neither ASA or AAP, up to cytotoxic concentration, had any effect on the sensitivity of MDCR cells to Influenza B infection. Both drugs, however, substantially reduced the sensitivity of these cells to exogenously provided interferon. As both drugs are mitochondrial toxins and displayed similar interactions with the virus, these studies question the substitution for ASA in young patients with influenza infection.