

638 **PERCUTANEOUS TRANSHEPATIC CHOLECYSTOGRAPHY FOR DIFFERENTIATING INTRA- AND EXTRAHEPATIC NEONATAL CHOLESTASIS**
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Methods of imaging the biliary tract in adults include ERCP and transhepatic cholangiography. In infants with cholestatic jaundice, in whom biliary atresia is a diagnostic possibility and early intervention critical, the patient's small size and lack of dilated intrahepatic ducts often precludes the use of these tests. We report two patients, four and five weeks old, in whom sonographically guided percutaneous transhepatic gallbladder puncture was used to facilitate a contrast study of the complete extrahepatic biliary tree. These infants presented with direct hyperbilirubinemia, acholic stools, normal ultrasound studies, and nonexcreting Disida scans on Phenobarbital. Percutaneous liver biopsies showed features of both intra and extrahepatic syndromes. To visualize the biliary tree without an operative cholangiogram, we punctured the gallbladder under ultrasound guidance with a 22 gauge spinal needle easily visible on the sonograms using an anterior transhepatic approach. The AP diameters of the gallbladders measured .5 and .7 cm. Bile was aspirated allowing immediate visual inspection of color. Renograffin was injected showing complete absence of a common hepatic duct in one case, confirmed surgically as biliary atresia, and small, but patent extrahepatic ducts in the second case, showing progressive nonsyndromic bile duct paucity. IV sedation was used and there was no bleeding or bile leak. Ultrasound guided percutaneous transhepatic cholecystography offers a safe, sensitive technique for the early differentiation between intra and extrahepatic neonatal cholestasis.

639 **ANTI GLIADIN ANTIBODIES DETECTED BY ELISA AS A MARKER OF CHILDHOOD CELIAC DISEASE**
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Antigliadin antibodies (AGA) have been proposed as a screening method for celiac disease. It has been questionable as to whether IgA or IgG AGA are more useful. We examined serum samples from 130 pediatric patients, including 16 with celiac disease. A direct ELISA assay was done for both IgA and IgG AGA. The result was expressed as the mean patient optical density (OD) minus the control (background produced by milk protein antibodies). The sensitivity and specificity of the assay is shown in the table.

IgG AGA	sensitivity	specificity
Celiac patients on gluten	91%	81%
All celiac patients	88%	90%

IgA AGA	sensitivity	specificity
Celiac patients on gluten	82%	64%
All celiac patients	73%	65%

IgA and IGG AGA	sensitivity	specificity
Celiac patients on gluten	88%	89%
All celiac patients	86%	90%

AGA were increased both in older patients (p<.002) and in the presence of celiac disease (IgG p<.0001, IgA p<.001). IgG AGA alone or the combination of both IgA and IgG are better predictors of celiac disease than IgA AGA.

640 **CHANGES IN RESTING ENERGY EXPENDITURE (REE) AND BODY COMPOSITION (BC) ON REFEEDING MALNOURISHED PATIENTS WITH CYSTIC FIBROSIS.** Nachum Vaisman, Paul Pencharz. Research Institute, The Hospital for Sick Children, Dept. Pediatrics, Toronto, CANADA M5G 1X8.

The effects of refeeding on REE and body composition were studied in 6 malnourished patients with cystic fibrosis, before and following 6 months treatment. REE was measured by open circuit indirect calorimetry after an overnight fast (12-14h) and results expressed as % of predicted (Harris-Benedict). Body composition was determined by anthropometry and total body potassium.

	Wt (kg)	Fat (kg)	LBM (kg)	REE Pred %	REE/LBM kg.d	kcal
Initial	40.2±9.0*	4.4±1.8***	35.7±8.1	111.7±10.1*	41.2±3.0**	
6 mths	45.3±9.3	7.0±2.0	38.2±7.9	128.9±15.1	47.2±5.8	

* p < 0.01 ** p < 0.05 *** p < 0.001

Refeeding increased body fat, lean body mass (LBM) and resting energy expenditure (REE). We have previously shown that the REE of CF patients increase as their pulmonary functions worsen. We concluded: (a) that our CF patients initial REE was (relatively) reduced due to undernutrition; (b) that refeeding increases the caloric needs of CF patients.

641 **CHANGES IN BODY COMPOSITION FOLLOWING KIDNEY TRANSPLANTATION.** Nachum Vaisman, Paul Pencharz, Dennis Geary. Research Institute, The Hospital for Sick Children, Dept. Pediatrics, Toronto, Canada M5G 1X8. Children with chronic renal failure were reported to have changes in body composition. Our clinical impression is that there is an excessive weight gain post kidney transplantation. Changes in body composition following kidney transplantation were studied in 8 patients (7 females, 1 male), age 3-17.5 years old. Body composition measurements included: weight, height, anthropometric measurements, lean body mass by total body K (TBK), total body water (TBW) by H₂¹⁸O and extracellular water (ECW) by Br⁻. Body weight was expressed as % of the ideal weight for height (W/HX) and body water compartments as % of body weight.

	Pretranspl.	1.5 Months	3 Months	6 Months
W/H %	96.0±13.8*	96.4± 9.1	111.6±12.2	116.3±13.0*
TBW/BW %	-	-	58.1± 6.1	56.6± 6.1
ECW/BW %	32.9± 6.5*	31.9±10.1	26.9± 6.3*	27.3± 8.6*
TBK g	-	-	71.4±29.6	77.3±31.5
Triceps Skinfold	9.9± 4.4*	10.1± 4.9	17.2± 5.5*	18.7± 6.4*
Mid Arm Mus.Cir.	167.3±36.1*	173.5±30.3	175.1±32.4	186.0±37.5*

* P < 0.05

Excessive weight gain was observed in most of our patients. This was accompanied by a gain in fat mass in the first 3 months and a subsequent increase in LBM especially in the next 3 months. ECW returned to normal. We concluded that the weight gain post kidney transplantation is mainly in fat and LBM and not related to retention of water. In the first 3 months patients are more prone to fat gain and dietary control may be needed.

642 **THE EFFECT OF SALBUTAMOL ON RESTING ENERGY EXPENDITURE (REE) IN PATIENTS WITH CYSTIC FIBROSIS.** Nachum Vaisman, Paul Pencharz, Lance Levy, Yok Tan, Steven Soldin, Gerard Canny, Elizabeth Hahn; Research Institute, The Hospital for Sick children, Dept. Pediatrics, Toronto, Ontario, Canada M5G 1X8.

The effect of salbutamol on REE was studied in 8 patients with CF and 5 healthy controls. REE was measured by open circuit indirect calorimetry after an overnight fast (12-14 hr) in 3 consecutive phases: no intervention, 2 ml-0.9% NaCl inhalation, and 2 ml 0.9% NaCl + 5 mg salbutamol inhalation (60m/20m/60 min respectively). Salbutamol levels were measured simultaneously every 15 min and determined by reversed phase liquid chromatography. There was no statistically significant difference in the response of CF and control subjects, and results were therefore pooled (n=13).

	Phase 1	Phase 2	Phase 3	P
REE Kcal/kg/D	31.85±3.87	31.42±4.27	34.96± 4.36	<0.01
Salbutamol mg/ml	0	0	1.88- 3.01	<0.001
Heart rate beats/min	69.00±4.00	69.00±4.00	78.00-80.00	<0.01

There was an increase in salbutamol blood levels, and a concomitant rise in heart rate and REE in response to salbutamol inhalation. REE increased by 10% during the first hour following salbutamol inhalation. We conclude that since inhaled salbutamol may be used several times a day it may have a significant effect, increasing total daily energy expenditure of patients with chronic lung disease. This observation should be considered in the overall management of patients with chronic lung disease such as CF, asthma and chronic bronchitis.

643 **"ABNORMAL" SUBSTRATE UTILIZATION ON REFEEDING PATIENTS WITH ANOREXIA NERVOSA (AN).** Nachum Vaisman, M. Rossi, E. Goldberg, E. Hahn, R. Clarke, P. Pencharz. Dept. Pediatr., University of Toronto, Research Institute, The Hospital for Sick Children, Toronto, Ontario, Canada

Patients with AN reduce their metabolic rates to compensate for decreased caloric intake. Little is known, however, on substrate utilization during refeeding. 9 malnourished girls with AN (age range 14.4-16.9 years old), weight as ideal weight for height 73.2 ± 11.5% were studied for the changes in Resting Energy Expenditure (REE) and substrate utilization in hospital (4-8 weeks) and while maintaining their weight after discharge (20-50 weeks). REE was measured by open circuit indirect calorimetry after overnight fast (12-14 h). Substrate utilization was calculated from protein oxidation derived from urine nitrogen excretion and non-protein RQ (nPRQ). The contribution of each macronutrient expressed as % of total REE.

	Wt kg	CHO %	Fat %	Pro %
on adm.	38.6 ± 7.5*	53.0 ± 18.6*	28.4 ± 13.6**	18.6 ± 11.2*
4-5 wk	42.2 ± 8.0	68.0 ± 12.9	-2.0 ± 19.0	33.9 ± 28.7
20-50 wk	48.4 ± 10.4	40.4 ± 13.4	40.8 ± 15.2	18.8 ± 12.6

* p < 0.05 ** p < 0.01

On admission, body weight and REE were reduced. On refeeding, carbohydrate utilization increased and net fat synthesis was seen. Protein oxidation increased almost twice than normal. On normal weight and weight maintenance substrate utilization returned to normal. We concluded that refeeding changes substrate utilization after overnight fast, causes an excess use of protein and futile cycle, synthesizing fat from carbohydrate.