●536A AN EXPERIMENTAL MODEL OF REYE'S SYNDROME: CHEMICAL AND INFLUENZA B VIRUS INTERACTION.

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In this study, we describe an experimental model using a mouse-adapted strain of Influenza B (Inf. B) and a surfactant (Toximul MP8) known to enhance infection with encephalomyocarditis virus in mice. One of the theories of etiology of Reye's syndrome (RS) is that an environmental toxin predisposes the young child to react abnormally to a virus infection. Inf. B is the most common virus associated with RS and its substitution into this model would have more relevance. Suckling mice were injected i.p. with a non-lethal dose of Toximul MP8. At various time intervals after chemical exposure the mice were infected intranasally with sub-lethal doses (less than 1 LD_{50}) of Inf. B. Mice exposed to a combination of chemical and virus showed a much higher mortality as opposed to control groups. This enhancing effect of Toximul MP8 was found to be time dependent. The brains and livers of animals show no cellular infiltrate and the livers showed various degrees of fine fatty changes. Urea cycle enzymes (ornithine transcarbamylase, carbamyl phosphate synthetase) were reduced. The cytoplasmic enzymes of the urea cycle were unchanged. This RS experimental model will allow the study of therapeutic intervention and the pathophysiological events leading to this fascinating syndrome.

537 PHARMACOLOGIC MANIPULATION OF BILE ACID KINETICS AND HEPATIC SECRETION IN A CHILD WITH INTRAHEPATIC CHOLESTASIS.

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Alagille's syndrome (J. Peds. 86:63,1975) is a recognizable subgroup of intrahepatic cholestasis(IHC) with characteristic dysmorphic features. A 10 year old female with comparable clinical appearance, liver biopsy showing ductular hypoplasia with cholestasis and elevated serum bile acids(BA) on phenobarbital(P) was further evaluated. BA pool size and turnover($t_{½}$) was determined with ^{13}C-labelled-carbon-24 cholic(C) and chenodeoxycholic (CH). Hepatic anion secretion was evaluated with Rose Bengal(RB) and the dynamic BSP test (T_{max}). Studies were repeated after 4 months on P and cholestyramine(Q) and 4 months on Q alone.

RESULTS:	TREATMENT PERIODS			LITERATURE
	P	P+Q	Q	NORMALS
Serum BA-μM/L	145	35.4	29.7	<7.5
C POOL-mg/m^2	279	283	246	600
C $t_{½}$-days	1.7d	2.1d	1.7d	2.2d
CH POOL-mg/m^2	66	165	97	480
CH $t_{½}$-days	0.7d	1.1d	0.9d	3.1d
72 HR STOOL RB(%)	43	26	33	>85
BSP T_{max}	1.1	1.21	0.74	5.0-12

CONCLUSION: Despite elevated serum BA on P, an Alagille's patient had shrunken BA pools with short $t_{½}$. Anion secretion was impaired. Other than reduction in serum BA with addition of Q minimal changes in BA kinetics and anion secretion were noted.

538 THE EFFECTS OF FREQUENCY AND DURATION OF BREAST FEEDING ON SERUM BILIRUBIN, WEIGHT GAIN AND MILK OUTPUT.

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Recent anthropological and biochemical studies question present feeding practices. To determine the effect of frequency and length of feedings we studied 46 healthy primiparous mothers and infants in the first month of life. Mothers were encouraged to nurse frequently. They recorded frequency and length of each feeding, and nipple pain for the first 14 days. We recorded infant weight and serum bilirubin. At 1 month, milk output was assessed for 24-48 hours by weighing at each feeding. Significantly lower bilirubin levels were noted with higher feeding frequencies ($p<.01$). Nipple soreness was not associated with frequent feedings. Although the number of feedings/24h in the first 14 days decreased significantly at 1 month ($p<.001$), the length of feedings remained similar ($p>.1$). At one month 89% of the infants were fully breast fed and the mean weight gain (39%) was greater than previously reported (30%) for breast fed infants ($p<.01$). Mothers nursing less than 8 times/24h in the first 14 days had a significantly lower milk output at 1 month ($p<.05$). In summary, encouraging unlimited feedings decreases serum bilirubin, increases the success of breast feeding and weight gain and is not associated with breast complications.

	First 14 days		1 Month		
	Number of feeds/24h	Length feeds min/24h	Number of feeds/24h	Length feeds min/24h	Milk Output ml/24h
Mean(SD)	9.7(2.3)	160 (51)	7.1(1.2)	150 (58)	715 (144)
Range	6.5 - 16	98 - 321	5.5 - 12	85 - 405	445 - 1035

539 INCIDENCE OF CHOLESTATIC JAUNDICE (CJ) IN CONTINUOUS (CS) AND INTERMITTENT (IT) HYPERALIMENTATION (PN): A PROSPECTIVE STUDY.

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61 infants from two weight categories were divided into 2 groups. The IT group received its daily PN during 18 hours plus six hours of noninfusion time and the CS group received its PN continuously during 24 hours. CBC, electrolytes, BUN, creatinine, glucose, liver function tests, & bili T/D were done twice weekly. There was no significant difference in these studies between the IT and CS groups except as noted below. Micro blood sugars were done on the IT group as explained below. Similar tests done on the CS group, obviously, did not show any hypoglycemia.

weight group (gms)	≤1500		1501-2500		Total	
	IT	CS	IT	CS	IT	CS
n =	17	20	11	13	28	33
CJ n = (%)	6(35)	8(24)	1(9)	3(23)	7(25)	11(33)

The duration of PN was longer for infants who developed CJ ($\bar{x}$ 42.7ds) compared with those who did not develop CJ ($\bar{x}$ 20.1ds). CJ occurred on $\bar{x}$ day 16 of PN for the IT group and on $\bar{x}$ day 23 for the CS group.(N.S.) In the IT group ≤1500 gms, hypoglycemia frequently occurred during the noninfusion times.

We conclude that the incidence of CJ does not change between IT PN and CS PN and that hypoglycemia is a significant risk for the IT PN infants ≤1500 gms.

● 540 OPTIMAL DIETARY THERAPY FOR OBESE ADOLESCENTS: EFFECTS OF DIETARY GLUCOSE OR FAT ON THE INTERRELATIONSHIPS OF PROTEIN AND GLUCOSE METABOLISM.

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We have compared 1.5 gm meat protein/kg ideal body weight (IBW)/d and either 1 gm glucose/kg IBW/d (P+G) or an isocaloric quantity of fat (P+F) in a crossover study of 8 obese adolescents. IBW was determined by measuring total body water with H_2O^{18}. Each diet period lasted 21 days, separated by one month of weight maintenance. Before and after each dietary period, rates of hepatic glucose production (Ra) were measured using a primed constant infusion of U-^{13}C-glucose. Nitrogen balance (N-bal) was determined weekly. All subjects had a coefficient of variation of daily urinary creatinine excretion < 13%.

Three week cumulative N-bal was significantly better ($p< .02$) on P+G. Ra was significantly lower than baseline on both diets but Ra on P+G was similar to P+F. Free fatty acid and insulin levels measured during the infusion did not differ on the two diets. Ketone bodies were significantly lower, and plasma glucose significantly higher on P+G. Ra correlated with N-bal on P+F ($r = 0.87$, $p < .01$) but not on P+G, even when 24h Ra was calculated and adjusted for glucose (G) intake.

Dietary carbohydrate does not appear to influence N-bal by reducing the hepatic demand for gluconeogenic substrate. Since % of CO_2 from glucose was decreased on P+F, decreased utilization of G may partially account for these differences.

541 PERCUTANEOUSLY-PLACED CENTRAL SILASTIC CATHETERS (PCSC) IN NEONATES.

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Complications of conventional surgically-placed central hyperalimentation catheters include caval obstruction, intracardiac thrombi and bacterial sepsis. In addition, patients require general anesthesia. We therefore have instituted in-nursery percutaneous placement of .025" o.d. Silastic catheters with the proximal tip situated within the right atrium. Ten PCSC have been placed in 8 infants weighing 880-3750 grams. Insertion sites were: right cephalic vein (3), left cephalic vein (1), right ext jugular vein (4), left ext jugular vein (2). PCSC remained in place 7-38 days. The only complication was accidental catheter dislodgement, which occurred in 3 instances (12, 16 and 20 days post-insertion). No other complications were encountered. Total cost to the patient was $268.35, compared with $791.40 for a surgically-placed central hyperalimentation line. Therefore, PCSC is an alternative to the larger bore, surgically-placed catheters, and can be inserted in the nursery without anesthesia in a small infant.