721 NEWBORN GASTRIC ACID SECRETION: EFFECTS OF CHOLINERGIC INNERVATION

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Our earlier studies demonstrated the ability of the newborn stomach to respond to Pentagastrin, Histamine, and 2-DG with augmented acid/pepsin secretion. A relative insensitivity to 2-DG stimulus has been noted in the first week of life. These studies were designed to assess the contribution of vagal maturity to increasing acid production in the newborn. Thomas cannulae were inserted in 21 piglets on the first day of life. Measurement of basal and stimulated acid secretion was performed on alternate days for the first 4 weeks of life. Secretion for a given stimulus before and after administration of atropine was evaluated. During the first and second weeks there was significant increase in both basal and stimulated acid production, stabilizing in the third and fourth weeks. The reduction in acid secretion following atropine became progressively more marked and was highly significant by the third week. These data suggest that vagal maturation plays an important role in the augmentation of acid of secretion noted in the human and piglet in the first month of life.

		eq/kg/30 minutes		
	30 min	30 min	30 min	30 min
HISTAMINE	92/74 ±15.59	204.35 ±41.27	279.31 ±30.71	278.1 ±33.27
AT/HISTA	56.32 ±18.98	148.40 ±34.49	161.31 ±26.33	195.57 ±29.19
PENTA	65.09 ±14.75	102.62 ±34.62	112.54 ±33.17	116.51 ±19.82
AT/PENTA	57.68 ±22.35	42.13 ±14.57	50.27 ±18.98	24.85 ±7.92

722 A NEW LOOK AT THE EFFECT OF STEROIDS ON THE OUTCOME OF ABDOMINAL PAIN IN CHILDREN WITH HENOCH-SCHONLEIN PURPURA.

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Since the observation of Allen and Diamond, steroids have been frequently used for the treatment of abdominal pain in patients with Henoch-Schonlein Purpura (HSP). We retrospectively reviewed the outcome of 26 children with HSP who were admitted to the hospital from 1976 to 1984. Twenty-five had abdominal pain; fifteen (60%) were male; ten (40%) were female; ages ranged from 3-18 yrs. ($\bar{x}$=8.5 yrs). Presenting findings included a typical rash in 21 (84%), arthritis in 17 (68%), a preceding infection in 8 (32%) and nephritis in 9 (36%). The duration of pain did not differ in those with or without hematuria, vomiting, melena, guaiac positive stool, leukocytosis, bandemia, elevated sedimentation rate or thrombocytosis ($p > .05$).

Fourteen children (56%) were treated with steroids; 11/25 (44%) were not. The two groups did not differ with respect to treatment with IV hydration, bowel rest or NG suction. There was no difference between the two groups in resolution or total duration of pain (Chi square, $p > .05$). Abdominal complications included intussuseption in one child and ileal perforation in another, 40 days after starting steroid therapy.

Conclusions: In this retrospective study, no clinical benefit was observed in those children who were treated with steroids. It, therefore, seems justified to conduct a prospective placebo controlled trial in children with HSP and abdominal pain to assess the true efficacy of steroid therapy.

723 PERIANAL STREPTOCOCCAL CELLULITIS

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Group A beta hemolytic streptococci can cause perianal cellulitis. First described by Amren et al, (AJDC 112:546, 1966), this infection receives little attention in subsequent literature. This study describes 14 patients with perianal streptococcal cellulitis evaluated from 1975 to 1984. Characteristically, the infection caused painful defecation and constipation with an intensely erythematous, well-demarcated perianal rash and blood-streaked stools. The average age of patients was 3.9 years (range 1-10 yrs.); the male:female ratio was 3.7:1. Seven of the 14 children had rectal bleeding, 5 had anal fissures, 6 had constipation. The mean duration of symptoms before diagnosis was 6.2 months (range 1-12 months). Often, previous evaluation included multiple diagnostic tests and local therapies. Misdiagnoses included simple anal fissure, inflammatory bowel disease, psychogenic stool holding, psoriasis and moniliasis. We established the diagnosis in all patients by culture of affected perianal skin and plating on 5% sheep-blood agar plates. Treatment with oral penicillin resulted in rapid resolution of the rash and disappearance of all complaints. Recrudescence of infection was not uncommon, necessitating a repeat course of oral antibiotics. On followup examination no patient had underlying gastrointestinal or systemic disease.

724 PARENTERAL-NUTRITION-INDUCED CHOLESTASIS AND METABOLIC BONE DISEASE: EFFECT OF DURATION AND PROTEIN LOAD.

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Seventy-five preterm infants with gestation less than 32 weeks and appropriate for their age received total parenteral nutrition (TPN) with Vamin and Aminosyn as protein base for more than 20 days. Signs for cholestatic jaundice, liver dysfunction and TPN-induced metabolic bone disease were monitored. The average duration of TPN (± SEM) was 35 ± 5 days, and they received (mean ± SEM) 3.2 ± 1.7 g/kg/day of protein base. Final diagnoses, duration of intermittent mandatory ventilation, incidence of necrotizing enterocolitis, sepsis, birth asphyxia, surgical intervention, etc. were monitored. Caloric intake was adjusted to stabilize weight gain which averaged about 16.1 ± 1.3 g/day. Fluid intake was limited between 100 to 160 cc/kg/day. Changes in caloric intake were made possible by adjusting protein intake. It was observed that severity of TPN-induced cholestasis significantly depended on the duration of TPN and the quantity of protein infused ($p<0.01$). TPN-induced metabolic bone disease was strongly correlated with the duration of TPN ($p<0.01$, $r=0.71$). We suggest infants on parenteral nutrition should be closely monitored for cholestasis, liver dysfunction and metabolic bone disease. Quantity and quality of protein infusate should be monitored. Daily protein intake should not exceed 2.5 g/kg/day.

† **725** IMPROVEMENT OF PROTEIN UTILISATION BY HIGHER ENERGY INTAKE IS NOT ACCOMPANIED BY A CHANGE IN NON-PROTEIN SUBSTRATE OXIDATION.

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Nitrogen utilisation is enhanced in parenterally fed neonates by increasing energy intake. In the present study we examine the change in fuel utilisation caused by the addition of lipid to a glucose/amino acid regimen. Metabolic rate (MR) was measured by 5 hr indirect calorimetry (IDC). Glucose oxidation (GO) was determined by measuring $^{13}CO_2$ enrichment at plateau during a 5 hr primed constant infusion of U-^{13}C-glucose. Fat oxidation (FO) was calculated as non-protein MR minus GO. Protein utilisation was expressed as the percentage of infused nitrogen that was retained. Sixteen neonates of comparable birthweight, gestational and postnatal age were divided into two equal groups; I-glucose only. II-glucose + lipid. Protein (2.8 g/Kg.d) and glucose (14 g/Kg.d) intakes were equal; but fat (2.1 g/Kg.d in group II) + energy (64 kcal gpI, cf gpII 86 kcal/kg.d) were different. No difference in MR (47.5 cf 45.5 kcal/Kg.d) were detected.

Group	GO g/Kg.d	FO g/Kg.d	Fat Storage g/Kg.d	Protein Utilisation %
I	7.29±0.49	1.45±0.15	-1.45±0.15	47.7±8.20
II	6.08±0.43	2.01±0.23	0.10±0.15	71.3±3.65
p	N.S.	N.S.	<.001	<.02

CONCLUSIONS: The addition of energy as lipid enhances protein utilisation without influencing the contribution of fat and carbohydrate to the resting energy expenditure. Hence, resulting in net fat accretion, as well as improved protein accretion.

726 BIOAVAILABILITIES OF CALCIUM (CA) AND PHOSPHORUS (P) ARE HIGHER IN FORTIFIED MOTHER'S MILK COMPARED TO COMMERCIAL FORMULA.

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Bioavailabilities of Ca and P in human milk and commercial formula preparations have not been assessed at similar levels of nutrient intakes. In this study, the utilization of Ca and P was compared during the first two postnatal mo in 2 groups of preterm infants fed either fresh mother's milk fortified with lyophilized human milk skim fractions and added Ca lactate and P salts (Group FM, birthweight, 1088 ± 53 g; gestation 28 ± 0.3 wk, Mean ± SEM) or a commercial formula designed for preterm infants (Group CM, 1057 ± 49 g; 29 ± 0.2 wk). Two 96-h balance studies were conducted at wk 3 and 7. Similar daily intakes were maintained in both groups: Ca 112 ± 2, P 68 ± 3, and nitrogen 486 ± 6 mg/kg and energy 129 ± 1 kcal/kg.

	Calcium (mg/kg/d)			Phosphorus (mg/kg/d)		
Group	Urine	Retention	Absorption	Urine	Retention	Absorption
FM	5 ± 1	65 ± 7*	66 ± 5%*	16 ± 2	54 ± 5†	96 ± 1%*
CM	4 ± 1	37 ± 4*	30 ± 4%*	14 ± 1	44 ± 1†	87 ± 1%*

(* $P < 0.005$, † $P < 0.07$)

Net Ca retention and absorptions of Ca and P were higher for group FM. The ratio and absolute values of Ca/P retention observed in Group FM approximated estimates of fetal retention more closely than those in Group CM. These results indicate that despite similar levels of intake for both groups, the bioavailability of Ca and P in FM was higher than in CM and that Ca and P adequacy can be maintained in preterm infants for two months when they are fed FM.