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CHARACTERIZATION OF THE COLLAGEN TYPES IN NORMAL AND INFLAMED HUMAN INTESTINE. M. F. Graham, C.O. Elson, R. F. Diegelmann, R. Gay, S. Gay (Spon. by H. Maurer) MCV/VCU, Dept. Pediatrics, Children's Medical Center, Medicine, and Surgery, Richmond, Va., U. of Alabama, Dept. Medicine, Birmingham.

We have studied the connective tissue changes in the bowel wall of patients with Crohn's disease. Surgically resected specimens from normal margins and inflamed areas were compared. The various collagen types were identified by specific purification schemes followed by slab gel electrophoresis, immunoblotting, and by specific staining with antibodies directed against collagen types IV & V. **Results.** Histological sections from inflamed areas demonstrated expansion of the muscularis propria and the muscularis mucosa, and vascular proliferation in the submucosa. Collagen had accumulated in the latter two areas. Collagen isolated from inflamed bowel and separated by electrophoresis contained in addition to the type I found in normal margins, bands that comigrated with a type V standard. The presence of type V was confirmed by immunoblotting. Immunohistochemistry of sections from inflamed areas revealed marked accumulation of types IV and V in the submucosa. **Conclusion.** In Crohn's disease, chronic inflammation of the intestine leads to the accumulation of abnormal amounts of collagen types IV & V. As these collagen types are synthesized by smooth muscle cells, we postulate that these cells may play a role in the stricture formation characteristic of Crohn's disease. (Supported by a grant from the National Foundation for Ileitis and Colitis.)

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THE EFFECTS OF MATERNAL ULTRAVIOLET-B IRRADIATION ON THE VITAMIN D CONTENT OF HUMAN MILK. Frank R. Greer, Bruce W. Hollis and Reginald C. Tsang, Univ. of Wisconsin, Madison, WI, Case Western Reserve Univ., Cleveland, OH Univ. of Cincinnati, Cincinnati, OH.

We studied the effects of a known amount of total-body ultraviolet-B light irradiation (1.5 M.E.D. equivalent to 30' of sunshine at noon on a clear summer day in fair-skinned women) on both serum and breast milk concentrations of vit D₃, vit D₂, 25-OH vit D₃, 25-OH vit D₂ and 1,25(OH)₂ vit D in 5 lactating Caucasian women. By 48 hrs post UV-B exposure, serum vit D₃ increased from 1.0±0.2 (SEM) ng/ml to 22.9±5.4 ng/ml (p<0.01, paired t test), remaining increased up to 14 days (2.30±0.12 ng/ml, p<0.01). Simultaneously, breast milk vit D₃ rose from 6 to 71 IU/L (p<0.02, range 34-148 IU/L) within 48 hr. of irradiation, remaining elevated up to 14 days (12 IU/L, p<0.05). Breast milk vit D₃ correlated with serum vit D₃ (r=0.91). 48 hrs post irradiation serum 25-OH vit D₃ increased from 13.9±2.7 to 17.6±3.3 ng/ml (p<0.05), peaking at 7 days (20.5±3.0 ng/ml, p<0.02) and remaining elevated at 14 days (20.3±3.2 ng/ml, p<0.05). There was no change in 25-OH vit D₃ in breast milk post irradiation. There was no change in serum or milk vit D₂, 25-OH vit D₂, or 1,25(OH)₂ vit D following irradiation. There was no correlation between breast milk fat (mean 3.4±2.4 [SD] g/dl) and milk vit D₃ or its metabolites. We conclude that maternal UVB irradiation (and thus sunshine exposure) significantly increases vit D₃ in human milk. Despite a rise in serum 25-OH vit D₃, vit D₃ is the only vitamin form which is readily transferred into human milk from maternal serum following maternal irradiation.

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CHANGES IN FAT CONCENTRATION OF HUMAN MILK WITH CONTINUOUS MECHANICAL PUMP INFUSION VERSUS INTERMITTENT BOLUS DELIVERY. Frank R. Greer, Ann McCormick, Jeff Loker. Univ. of Wisconsin, Madison, WI (Spon. by R.W. Chesney)

We studied changes in fat conc. and fat loss in human milk during 8 hr continuous infusion with 2 mechanical pumps (Harvard syringe [HARV] and Holter roller [HOLT] with Buretrol) and for comparison intermittent bolus delivery. We varied rate of pump infusion (1, 4 or 7 ml/hr), state of homogenization and syringe position (HARV, tip vert or horiz). For each set of variables, infusions were repeated x4. Hourly samples were analyzed for fat. Infusion apparatus held only enough milk for an 8 hr. infusion, milk in the tubing being recovered by air infusion at the same rate. At 1 ml/hr with HARV and HOLT, 26-39% of fat was lost regardless of conditions. Fat conc. during infusion decreased to 32% of baseline for HARV and to 2% for HOLT, regardless of syringe position (HARV) or homogenization. During the 8th hr of infusion a large fat bolus was delivered (240±74% HARV & 435±131% HOLT > baseline fat conc). At 4 and 7 ml/hr fat losses for HARV and HOLT were 1-23% & 5-31% respectively and fat conc. decreased to 30-70% of baseline for HARV and 5-40% for HOLT. A large fat bolus was delivered during the 8th hr of infusion (144-333% HARV, 277-567% HOLT > baseline fat conc). Homogenization made no difference. For HARV changes in fat conc. could be decreased 12-22% by keeping syringe tip vert. With intermittent bolus delivery of milk (1, 4, 7 ml) no loss of fat, change in fat conc., or fat bolus occurred. Thus, for NG delivery of human milk to LBW infants, intermittent bolus is preferred. Continuous NG pump infusion should not be used because of large changes in fat conc. and fat loss.

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ENTERIC PROTEIN LOSS, MEASURED BY FECAL ALPHA-1-ANTI-TRYPsin (AT) CLEARANCE, IN THE ASSESSMENT OF CROHN'S DISEASE ACTIVITY. A.M. Griffiths, S. Soldin, G. Hewitt & R. Hamilton, Depts. Pediatrics & Clin. Biochemistry, Hosp. Sick Children & University of Toronto, Toronto, Ontario.

In 63 patients with Crohn's disease, less than 19 yr. of age, we compared conventional measures of disease activity against 24 hr. fecal alpha-1-AT clearance. Clearance was significantly increased in patients with abnormal ESR (>15 mm/hr) but not in those with abnormal Crohn's disease activity index, CDAI, (>150) or increased platelet count (>400,000). As expected, in those with diminished serum albumin levels (<35 g/L), fecal alpha-1-AT clearance was significantly increased.

		Fecal alpha-1-AT clearance - μ l/24 hr (normal >22)				CDAI		Plat. count ($10^3/mm^3$)		ESR-mm/hr		Albumin (g/L)	
		≤ 150		>150		≤ 400		>400		≤ 15		>15	
m		79	111			64	87			47	107	124	57
SD		80	78			70	68			46	93	94	71
p		NS				NS				.005		.005	