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ASSESSMENT OF COLONIC TRANSIT IN 24 HOURS.
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Current scintigraphic methods of measuring colonic transit involve upto 60 hours of data acquisition. To determine if comparable information can be obtained in shorter, more convenient studies, the data available at 24 hours was compared with the colonic transit results from 60-hour studies.

Colonic transit was measured in 70 subjects. Indium-111 was delivered by enteric-coated capsules which break down in the terminal ileum releasing boluses of radio-isotope into the ileocaecal region. Gamma camera images were acquired for upto 60 hours. The colon was divided into 5 regions of interest (ROI's) and segmental colonic transit was calculated for each subject. Using segmental colonic transit data from whole studies, subjects were classified as follows:- 1) normal, 2) rapid colonic transit, 3) generalised colonic delay, 4) right-sided colonic delay, and 5) left-sided colonic delay.

The distribution of scintigraphic activity throughout the colon at 24 hours was also used to classify subjects. How this method of assessing colonic transit compares with the whole 60-hour study is shown below:-

	No. of subjects		
	60-hour study	24-hour study	Agreement
1) Normal	19	16	84%
2) Rapid	13	12	92%
3) Gen. delay	11	6	55%
4) R. delay	26	25	96%
5) L. delay	1	1	100%
All subjects	70	60	86%

Categorisation of subjects using data available at 24 hours correlates well with the eventual categorisation of subjects using data from conventional 60-hour studies. We conclude that information on colonic transit may be obtained in shorter, more convenient 24-hour studies.

● GASTRIC AND SMALL INTESTINAL MOTILITY IN HUMANS FOLLOWING SMALL BOWEL TRANSPLANTATION (SBT). WR Hutson. PE Putnam, S Todo, K Abu-Elmagd, JR Reynolds and H Furukawa. Departments of Medicine and Transplantation Surgery, University of Pittsburgh School of Medicine, Pittsburgh, PA.

SBT in humans is an uncommonly performed procedure and little is known about the effects on gastrointestinal motility and transit. The purpose of this study was to characterize motility of the stomach and small intestine in the post SBT patient and to correlate radionuclide gastric emptying (GE) with these findings. Methods: Gastric and small bowel motility studies were performed in 6 patients (4 males, 3 females; mean age 21 yrs.;range 8-33 yrs.) who had undergone either SBT alone, combined small bowel/liver transplantation, or multivisceral transplantation after a mean of 9.5 months (range 2-29 mos.). Prior to transplantation, all patients had short gut syndrome, and 5 had TPN related liver disease. All patients were able to eat solid food or tolerate enteral nutrition at the time of the study. Motility was measured using either a multilumen perfusion catheter or a solid state catheter with multiple transducers. A 4-7.5 hour fasting period was obtained followed by ingestion of either 150 grams of Ensure(R) or a 511 kcal solid meal and 1-2 hours of postprandial recording. GE of solids and liquids was measured in 3 patients using meals containing ^{99m}Tc-SC labeled eggs and ^{99m}Tc-SC labeled Gatorade. Results: Fasting period: Antral motility was abnormal in all patients exhibited by decreased amplitude or frequency of contractions. Propagated MMC activity began in the stomach in 1 patient on 3 different occasions. Two patients exhibited MMC activity beginning in the intestine. Of those, one patient had 4 MMC's, 2 of which were propagated and 2 simultaneous and the other had both simultaneous and retrograde MMC activity. Both propagated and nonpropagated burst activity was present crossing native bowel to transplanted bowel. Bands of quiescence alternating with bands of activity were common. Only those patients who had undergone multivisceral transplantation had propagation of MMC activity. Fed pattern: No patient had normal postprandial activity in either the stomach or small bowel. Solid GE was normal in 2 patients and prolonged in one of the 3 tested; liquid GE was prolonged in 1 patient and normal in 2 patients. Conclusions: 1) Both gastric and small bowel motility following SBT are abnormal. 2) Transmission of contraction waves from native intestine to transplanted intestine occurs, although it is not always coordinated. 3) Multivisceral transplantation appears to increase the likelihood of propagated MMC activity as opposed to small bowel or small bowel/liver transplantation. 4) GE does not correlate with gastric or small bowel activity and it is unclear why this is so.

● ANTRODUODENAL MANOMETRY AND INTESTINAL PATHOLOGY CORRELATE IN CONGENITAL CHRONIC INTESTINAL PSEUDO-OBSTRUCTION (CIP) PE Hyman, C DiLorenzo, A Hoon, S Krishnamurthy *, P Dean **, MD Schuffler *, Harbor-UCLA Medical Ctr, Torrance, Pacific Medical Ctr, Seattle, and Univ of Tennessee-Baptist Memorial Hosp, Memphis **

CIP is a clinical diagnosis applied to a heterogeneous group of nerve and muscle disorders. Nineteen patients with congenital CIP (7 male, 18 TPN dependent) had both antroduodenal manometry and full thickness small bowel biopsies, evaluated by H&E and Smith's silver stains of the myenteric plexus. Ages at manometry ranged from 2 mo to 19 y (median 1 y). Ages at biopsy ranged from 7 mo to 17 y (median 2.5 y). Biopsies showed neuropathy in 15, myopathy in 3, and no diagnostic abnormality in 1, so that a pathological diagnosis was made in 18 of 19 (95%). Manometry differentiated between neuropathy (normal amplitude, disorganized contractions) and myopathy (persistently low amplitude organized contractions) in 15 of 19 (79%), but 4 studies with persistently low amplitude disorganized contractions were judged indeterminate. All 15 diagnostic manometries agreed with pathology. Those with aganglionosis or severe hypoganglionosis (n=3) had normal amplitude, totally disorganized contractions. In those with moderate hypoganglionosis (n=7) nonpropagating clusters of normal amplitude contractions were the predominant feature and MMCs were absent, a typical pattern for preterm infants. Two with maturational arrest and 1 with neuronal dysplasia had dilated duodenums and persistently low amplitude uncoordinated contractions. The final 2 patients with neuropathy had MMCs, but their abnormal nerve plexi were limited to sites distal to the ligament of Treitz. All 3 patients with myopathy had MMCs and persistently low amplitude contractions. One patient with a non-diagnostic biopsy and low amplitude uncoordinated contractions remains a diagnostic problem. We conclude that abnormalities of antroduodenal manometry correlated with morphologic disease in congenital CIP, and may be used to distinguish between myopathy and neuropathy. Developmental changes in preterm infant motility may provide a model for some neuropathic forms of CIP.

● EFFECT OF FK 506 ON GASTROINTESTINAL TRACT: COMPARISON WITH ERYTHROMYCIN. A. Ikoma, K. Nakada, T. Suzuki, J.C. Reynolds, S. Todo, T.E. Starzl, Dept. of Surgery and Internal Medicine, University of Pittsburgh, School of Medicine, Pittsburgh, PA.

Macrolides have potent effects on gastrointestinal motility and are used as prokinetic agents. Macrolides, however, like erythromycin (EM) and the novel macrolide immunosuppressant FK-506 (FK) may also cause nausea vomiting and abdominal pain after intravenous administration. **AIM:** To test the hypothesis that the emesis induced by FK results from similar motility effects as the structurally related macrolide antibiotic, EM. **Methods:** The effect of FK on emesis and GI motility was compared with the effect of EM in 5 healthy conscious dogs. Eight strain gage transducers were fixed on the GI tract from the antrum to the colon. After a 2-week recovery period, FK (0.1mg/kg) or EM (3mg/kg) was injected intravenously in bolus during phase I of MMC, 30 min after cessation of phase III of the duodenum in the fasting state. Ondansetron (OND) (0.15mg/kg), an antiemetic which antagonizes 5-HT^3 receptor in the chemoreceptor trigger zone and peripherally or atropine sulfate (0.1mg/kg) was given intravenously 30 min or 10 min respectively prior to injection of FK or EM. Clinical findings and motility were monitored for 3 hours. Each experiment was repeated twice. **Results:** Retching or vomiting occurred in 80% of FK experiments and 70% of EM experiments. FK caused small amplitude phasic contractions along the entire GI tract that started 4.7± 0.4 min after injection and continued for 4.8±1.8 min at the proximal jejunum while EM induced strong upper GI contractions that started 0.6±0.1 min after injection and lasted for 51.9±17.9 min at the proximal jejunum. FK induced 6 retrograde peristaltic contractions (RPCs) in 60% of experiments while EM induced 16 RPCs in 70% of experiments. FK induced 27 giant migrating contractions (GMCs) in 100% of experiments while EM induced only 3 GMCs in 20% of experiments. Emesis after FK or EM tended to be decreased by both atropine and OND. Atropine significantly reduced the amplitude and duration of contractions induced by both FK and EM ($p<0.05$). In contrast, OND reduced the amplitude of contractions induced by FK ($p< 0.05$) but had no effect on EM. **Conclusion:** 1.Two macrolides FK and EM have potent effects on GI motility and vomiting in the dog. 2. The effects of FK are abolished by both OND and atropine while those of erythromycin are abolished by atropine. Despite similarity in structure, the motility effects of FK and EM differs in both character and mechanism.