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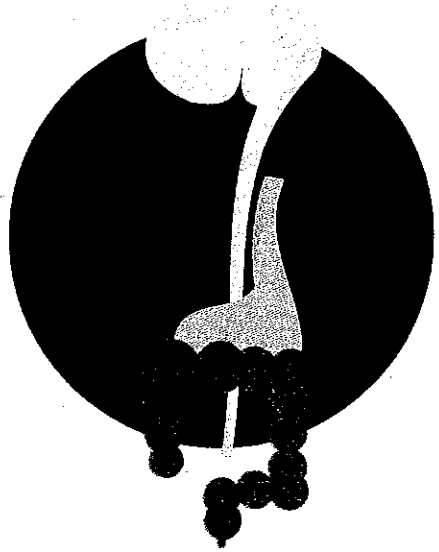

THE EUROPEAN SOCIETY FOR NEUROGASTROENTEROLOGY AND MOTILITY

PRESENTS

ABSTRACTS OF

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fields (hpf x200) was calculated in well-orientated sections with the full mucosal thickness visible.
Results: Mean cells/hpf: All biopsies were normal using conventional histology. 'Other-IBS' showed increased mast cells (53.5 $P < 0.05$ 95% CI 0.2–15.3) & CD3+LPLs (120.8 $P = 0.01$ 95% CI 4.9–36.4) compared to controls (45.8 & 100.2 respectively). Patients with PI-IBS had raised EC and CD3+LPLs whilst those with C-IBS were not significantly different from controls. Anxiety levels were greater in IBS than controls (mean 10.2 v 4 $P < 0.001$) but not significantly different between the 3 patient groups. Mast cell counts increased with increasing anxiety levels ($P = 0.015$) with a significant difference between severe anxiety and normal levels of anxiety (59.9 v 42.9 $P < 0.001$).
Conclusion: Increased mast cells are associated with a specific non-constipated IBS phenotype. High levels of anxiety may increase mast cell counts, which may contribute to symptoms.

O22

Neonatal maternal deprivation increases gastrointestinal permeability and alters mucosal integrity in young adult rats

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Background: Stressful events in the early period of life, such as maternal deprivation has been shown to modify the adult immune function and neuronal circuitry, and to increase the prevalence of gastric erosions. The present study aimed to establish the effect of maternal deprivation on gastrointestinal paracellular permeability and mucosal integrity in young adult rats.
Methods: Male Wistar rat pups were submitted to a maternal deprivation stress procedure or left undisturbed with their dam. Maternal deprivation was applied for 3 hours daily, during postnatal days 2 to 14. Experiments were performed at 12 weeks of age. Gastrointestinal permeability was assessed by oral administration of 51Cr-EDTA (1μCi/rat), and expressed as the percentage of radioactivity collected in the urine of 24 hours. Bacterial translocation was assessed in liver, spleen and mesenteric lymph nodes (MLN) samples where total aerobic (TAB) and anaerobic (TANB) bacteria were counted. Colons were collected and weighted: myloperoxidase activity (MPO U/g), mucosal mast cells (number/mm2), and macroscopic damage scores were determined (mean ± SEM for each group).
Results: Maternal deprivation increased gastrointestinal permeability (5.23 ± 0.50% vs. 2.66 ± 0.47%; $P < 0.05$) and induced bacterial translocation to liver (TAB: 210 ± 45/g; TANB: 290 ± 130/g), spleen (TAB: 47 ± 12/g; TANB: 52 ± 8/g), and MLN (TANB: 97 ± 10/g). Neonatal stress also increased MPO activity (426.6 ± 69.4 vs. 127.7 ± 22.3; $P < 0.01$), number of mucosal mast cell (113 ± 6 vs. 79 ± 7; $P < 0.01$), and colon weight (1.57 ± 0.13 g vs. 1.32 ± 0.17 g; $P < 0.05$). Macroscopic observation reveals focal hyperaemia and/or colonic adherence in mother-deprived but not in control rats.
Conclusion: Our results show that maternal deprivation increases gastrointestinal permeability and alters colonic mucosal integrity. This study suggests that early life events may pave the way for long-lasting changes in gastrointestinal physiology and mucosal integrity in the adult.

O23

Irritable bowel syndrome patients exhibit an altered visceral perceptual and neuroendocrine response to acute mental stress

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Background: Stress is believed to play a role in irritable bowel syndrome (IBS).
Aim: Evaluate the effects of acute mental stress on rectal sensitivity and the neuroendocrine response in IBS and healthy controls (HC).
Methods: Twenty-two HC and 18 IBS patients were studied with rectal balloon distensions before, during and after mental stress (color word conflict test and an arithmetic test). Another 10 HC and 9 patients were studied in supplementary sessions. Rectal sensitivity (thresholds and intensity (VAS)) and perceived stress and arousal (VAS) were determined. Plasma levels of CRF, ACTH, cortisol, noradrenaline and adrenaline (mean (SEM)) were analyzed at baseline, immediately after stress and after the last distension. Heart rate was recorded continuously.
Results: Thresholds were increased during stress vs. baseline in HC for perception ($P = 0.003$), defecatory urge ($P = 0.007$) and discomfort ($P = 0.11$), which was not seen in IBS. Both groups showed lower thresholds after vs. during stress ($P < 0.05$). Repeated distensions without stress did not affect thresholds. Both groups showed increased heart rate ($P < 0.001$) and VAS ratings for stress and arousal ($P < 0.05$) during stress. Patients demonstrated higher ratings for stress, but lower for arousal than HC. Basal CRF levels were lower in patients (36.3 (0.9) vs. 40.3 (1.2) nmol/l; $P < 0.05$) and increased significantly during stress in patients (37.1 (1.0) nmol/l; $P < 0.01$), but not in HC (41.0 (1.3); $P = 0.11$). IBS responded with higher levels of ACTH during stress (6.9 (1.1) vs. 5.2 (1.1) nmol/l; $P = 0.02$), which was not seen in HC ($P > 0.20$). Patients had higher basal levels of noradrenaline than HC (1.8 (0.16) vs. 1.3 (0.08) nmol/l; $P < 0.01$). HC, but not patients, showed increased levels of adrenaline and noradrenaline in response to stress ($P = 0.02$).
Conclusion: IBS patients exhibit an altered visceral perceptual and neuroendocrine response to mental stress. This might be of importance in stress-related symptoms seen in IBS.

O24

Neuro-immune interaction in manipulated intestine triggers an adrenergic inhibitory pathway maintaining prolonged postoperative ileus

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Background: Post-operative ileus directly following abdominal surgery results from activation of inhibitory neural pathways due to intestinal handling. The prolonged period of hypomotility however, may be mediated by a manipulation-induced inflammatory response in the intestine. We hypothesized that these intestinal inflammatory cells are able to activate neural pathways, thus inhibiting motility of the entire GI-tract.
Methods: The effect of laparotomy (L) only, or L combined with manipulation of the small intestine (IM), on gastric emptying was determined in a mice. After 6 and 24 h, gastric emptying was determined by scintigraphic imaging after oral gavage of a 99Tc labelled semi-liquid meal (1.5% methylcellulose). In addition, gastric and ileal tissue was isolated and assayed myeloperoxidase (MPO) activity. The neuromuscular function of gastric muscle strips was studied in organ baths.
Results: IM, but not L alone, elicited an increase in MPO activity from 5.3 ± 0.9 (6 h after surgery), to 13.1 ± 2.9 U/g (24 h after surgery). No increased MPO activity was found in the stomach. The intestinal inflammation was paralleled by a delay in gastric emptying; gastric retention, measured 64 min after gavage of the meal (Ret64) was significantly increased ($P < 0.05$) from 17.8 ± 9.0% (L) to 51.1 ± 5.5% (IM) at 6 h, and remained elevated after 24 hr (Ret64 14.5 ± 2.7% (L) and 29.5 ± 4.1% (IM)). Treatment with the ganglion blocker hexamethonium (1 mg/kg), or guanethidine (50 mg/kg) prevented gastroparesis at 6 and 24 h. Pre-operative inhibition of leukocyte recruitment by treatment with ICAM-1 and LFA-1 blocking antibodies prevented gastroparesis at 24 h. After IM, *in vitro* contractility of gastric muscle strips upon carbachol or nerve stimulation was not affected.
Conclusions: Our results indicate that local muscularic infiltrates, recruited after manipulation, are able to activate inhibitory adrenergic pathways to inhibit gastric emptying. Prevention of the infiltrate prevented gastroparesis, indicating that activation of this neural pathway is maintained by a neuro-immune interaction.

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