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THE MENSTRUAL CYCLE AFFECTS RECTAL VISCERAL SENSITIVITY IN PATIENTS WITH IRRITABLE BOWEL SYNDROME (IBS) BUT NOT HEALTHY VOLUNTEERS. NA Jackson, LA Houghton, PJ Whorwell. Department of Medicine, University Hospital of South Manchester, UK.

We have previously shown that the menstrual cycle has no effect on rectal visceral sensitivity in normal healthy volunteers, despite them having looser stools at menses (Jackson *et al* Dig Dis Sci 1994; 39: 2607-2611). However, patients with IBS often report an exacerbation of their IBS symptoms at menses, raising the possibility that IBS patients may respond differently to the menstrual cycle. Rectal responses to balloon distension during days 1-4 (menses), 8-10 (follicular phase), 18-20 (luteal phase) and 24-28 (premenstrual) of the menstrual cycle were therefore assessed in 19 female IBS patients (aged 21-44 yrs), diagnosed by the Rome criteria. During the course of the study all patients completed symptom diaries to assess abdominal pain and bloating (visual analogue scales) and frequency of bowel habit (per day). In addition the level of anxiety was assessed using the Hospital Anxiety and Depression questionnaire.

Results	day 1-4	day 8-10	day 18-20	day 24-28
Symptomatology:				
Pain	5.3 (2.3) _{*,†,‡}	4.3 (2.1) _†	3.5 (2.9)	4.1 (2.2)
Bloating	5.4 (2.8) _{†,‡}	4.9 (2.9) _†	3.6 (3.1) _‡	4.3 (2.4)
Bowel frequency	2.5 (1.6) _{*,†,‡}	1.6 (1.0)	1.8 (1.2)	1.5 (0.9)
Anxiety	3.8 (2.8)	3.6 (2.9)	3.6 (2.7)	3.4 (2.5)
Rectal sensitivity (ml):				
Stool	29.5 (14.7) _*	46.4 (26.5)	36.8 (16.7)	34.7 (22.1)
Urgency	61.3 (24.7) _*	96.7 (42.6)	70.3 (35.0)	78.4 (28.8)
Discomfort	95.0 (35.4) _*	124.5(49.5)	107.9(34.3)	107.4(38.8)

(Results expressed as mean (SD). Significantly different ($p < 0.05$) from days 8-10 indicated by *, from days 18-20 indicated by †, and from days 24-28 by ‡)

The above results were not associated with changes in anxiety.

Conclusion These data (1) confirm that IBS symptomatology is exacerbated at menses and (2) show that in contrast to normals rectal sensitivity changes with the menstrual cycle. These cyclical changes in sensitivity suggest that patients with IBS respond differently to fluctuations in sex hormones than normals.

TH207

LASER DOPPLER MUCOSAL FLOWMETRY - THE FIRST DIRECT MEASURE OF THE LEVEL OF ACTIVATION OF EXTRINSIC NERVES TO THE GUT

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Background: In functional disorders it is unknown whether disturbed function is due to an intrinsic gut abnormality or altered extrinsic innervation. Existing autonomic tests measure cardiorespiratory or skin responses, but efferent brain pathways are organ specific. As extrinsic nerves control mucosal microcirculation we investigated whether mucosal blood flow measurement could be used as a direct measure of gut extrinsic nerve autonomic activity. We also report its use in idiopathic constipation.

Materials and Methods: 72 patients with idiopathic constipation (63 female, mean age 40) and 26 healthy volunteers (19 female, mean age 37) had mucosal doppler blood flow (MDBF) measurements at rest, and after inhaled placebo and ipratropium (40µg) to test acute changes in extrinsic innervation. All subjects also underwent general autonomic function testing: measurement of RR variability, Valsalva ratio (VR) (both test vagal cholinergic), orthostatic adjustment ratio and Phase II:IV blood pressure ratio of the Valsalva manoeuvre (both test sympathetic postganglionic activity). Patients had a radio-opaque marker transit study.

Results: Constipated subjects had lower baseline MDBF than controls (157 v 186 flux units (FU), $p < 0.03$). Patients with slow transit had lower MDBF than normal transit (146 v 167 FU, $p < 0.05$). The number of X-ray retained markers was inversely correlated with MDBF ($r = -0.86$, $p < 0.001$). Ipratropium reduced MDBF compared to placebo ($p < 0.03$), reduced MDBF less in constipated patients than controls (10.2 v 15.7, $p < 0.05$), and reduced MDBF less in patients with slow compared to normal transit (-6.8% v -14.2%, $p < 0.03$). Constipated patients, but not controls, showed reduced RR variability (25 v 34%, $p < 0.03$) & VR (98 v 137, $p = 0.09$). MDBF correlated with vagal cholinergic function ($r = 0.76$, $p < 0.005$).

Conclusions: Laser doppler mucosal flowmetry is a gut specific, sensitive, quantitative measure of extrinsic autonomic nerve activity. Acute inhalation of cholinomimetic establishes that extrinsic nerve activity is being measured. The technique has established that patients with idiopathic constipation have altered extrinsic gut nerve activity, and the degree of slow transit correlates with the degree of altered extrinsic innervation.

TH206

THE RECTO-ANAL INHIBITORY REFLEX (RAIR): ABNORMAL RESPONSE IN DIABETICS SUGGESTS AN INTRINSIC NEURO-ENTEROPATHY

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Introduction: The recto-anal inhibitory reflex (RAIR) is characterised by reflex relaxation of the anal canal in response to electrical stimulation of the rectal mucosa, and is mediated by nitergic neural plexuses within the gut wall. Impairment of this reflex may lead to incontinence.

Aim: To measure anal canal pressures, anal mucosal electrosensation and RAIR in diabetic patients and correlate these measurements with incontinence for gas or faeces.

Methods: Anal canal pressure, RAIR and continence was evaluated in 30 diabetic patients [Male:Female=13:17, median age 57 years (range 37-70)], and these data were compared with similar data obtained from 22 age and sex matched 'healthy' controls [Male:Female= 9:13, median age 51 years (range 19 - 65)]. Median duration of diabetes was 8 years (range 3 - 30). 12 (40%) of the 30 diabetics had impaired continence for gas (n=12) and liquid faeces (n=3). None of the controls had incontinence.

Results: Maximum resting anal canal pressure (MRP) was [median (range)]: Patients 30mmHg (20-75) vs. Controls 40mmHg (20-105), $P = 0.61$. Maximum squeeze pressure (MSP) [median (range)]: Patients 65mmHg (30-150) vs. Controls 84mmHg (35-230), $P = 0.59$. Threshold rectal mucosal electrosensation (RMES-T) [median (range)]: Patients 27 mA (5-40) vs. Controls 13mA (5-28), $P = 0.03$. Maximum tolerable rectal mucosal electrosensation [median (range)]: Patients 40 mA (20-60) vs. Controls 20 mA (10-30), $P = 0.042$ (all comparisons using Wilcoxon rank test). RAIR was present in 8, abnormal in 5 (1 with incontinence), and absent in 17 (11 with incontinence) diabetics while it was present in 18 and abnormal in 4 controls (test of proportion, $P = 0.031$).

Conclusions: RAIR was impaired in significantly more patients with diabetes than controls implying impairment of intrinsic neuronal function. All diabetic patients with incontinence had impaired or absent RAIR. Impairment of this reflex may be a useful predictor of incontinence in diabetics.

TH208

GAX COLLAGEN INJECTIONS: A NOVEL TREATMENT FOR FAECAL INCONTINENCE.

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The treatment of faecal leakage secondary to dysfunction of the internal anal sphincter (IAS) is unsatisfactory. Surgical reconstruction or plication of the IAS rarely improves function. We have tested the hypothesis that in patients with faecal leakage, injection of GAX Collagen either to obliterate the key-hole deformity, or raise anal cushions in patients with weakness of the IAS will alleviate the symptom of faecal incontinence. 11 patients have been recruited to the study. 3 patients had faecal incontinence following haemorrhoidectomy, 2 following internal sphincterotomy and 6 had idiopathic faecal incontinence secondary to weakness of the IAS. All patients had anorectal physiology (ARP) and endoanal ultrasonography performed prior to GAX Collagen injections. The external anal sphincter was morphologically intact in all patients, and squeeze pressures were within the normal range. Resting pressures were low (30+8cm of water). In 2 patients who had faecal incontinence following lateral sphincterotomy, there was a guttering deformity present and the defect could be seen on endoanal ultrasonography. All patients underwent ARP post injection and there was a rise in both resting (45+10cm water) as well as squeeze pressures (130+10cm water), but the difference did not reach statistical significance. Symptomatically 8 patients showed marked improvement, 1 patient reported 50% improvement, another patient reported 20% improvement, and a third showed no improvement at all. 2 of the patients who showed more than 90% improvement required a repeat injection after two months. These data show that GAX Collagen injections for internal anal sphincter defect or dysfunction may be a useful way of treating faecal incontinence.