Approach to Chronic Diarrhoea

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Medicine Review Course
Question: In your experience, which of the following is the great barrier to optimal and timely management of chronic diarrhoea?

- Inconclusive tests: 46%
- Presence of other GI symptoms: 33%
- Time needed for history taking: 13%
- Lack of effective Rx options: 7%
Learning Objectives

- Appreciate the relevant differential diagnoses of chronic diarrhoea
- How to distinguish functional bowel disorders from organic causes
- Pragmatic approach to evaluate chronic diarrhoea with selective use of investigations
Definitions of diarrhoea

- Frequency $\geq 3$ x per day and/or presence of loose or watery stools

- Stools $> 200$ g/per day [limitations]

- Acute $\leq 14$ days
- Chronic $> 4$ weeks

Conditions to exclusion

- Fecal impaction and overflow diarrhea
- Fecal incontinence
Just to be clear/sure
Characterising Diarrhoea

Bristol Stool Chart

- Type 1: Separate hard lumps, like nuts (hard to pass)
- Type 2: Sausage-shaped but lumpy
- Type 3: Like a sausage but with cracks on its surface
- Type 4: Like a sausage or snake, smooth and soft
- Type 5: Soft blobs with clear-cut edges (passed easily)
- Type 6: Fluffy pieces with ragged edges, a mushy stool
- Type 7: Watery, no solid pieces. Entirely Liquid

Lewis et al. Scand J Gastroent 1997
Diagnostic categories of 193 patients referred for chronic diarrhoea in at Baylor University Medical Centre (1985-1990)

- Laxative abuse
- Radiation enteritis
- IBD
- Pancreatic insufficiency
- Small bowel dysfunction
- Microscopic/collagenous colitis
- After surgery
- Idiopathic secretory diarrhea
- Low volume syndromes
Initial Assessment of Chronic Diarrhea

- Review history
- Physical examination
- Sub-type diarrhea group:
  - watery (osmotic/secretory), inflammatory and fatty
- Laboratory tests:
  - FBC, Albumin, Electrolytes, CRP/ESR, Folate/B12/Fe, Thyroid function
- Stool analysis:
  - Standard Pathogens, Ova, Cyst, Parasites
Classifying Chronic Diarrhoea

- Inflammatory Diarrhoea
  - Blood in stools
  - Eg. Infections, IBD

- Osmotic Diarrhoea
  - Resolves with fasting
  - Eg: Lactose intolerance, antacids

- Fatty Diarrhoea
  - Steatorrhoea
  - Eg. Pancreatic insufficiency
  - Bowel resections

- Secretory Diarrhoea
  - Voluminous, not responsive to fasting
  - Eg. Cholera toxin, NET
Case illustration

• 30 year old Chinese male
  – Diarrhoea x 2 months, 50% liquid, 4-6 x/ day
  – No blood, associated with cramps
  – 1 week before onset of symptoms, travelled to Jakarta
  – Saw a GP and received a course of ciprofloxacin
  – Weight loss 5 kg (8% of BW)
  – Clinical examination: pallor and mild abdominal tenderness
Targeted History Taking

- Is diarrhoea acute vs. chronic (>4 weeks)?
- Is diarrhoea episodic vs. constant?
- What is the patient's age?
- How is the diarrhoea affected by fasting and diet?
- Red flag questions:
  - Does the diarrhoea wake the patient from sleep?
  - Is there blood in the stools?
  - Is there weight loss?
- What are the patient's medication (supplements) and travel history?
- What is the patient's past medical and surgical history?

Diagnosing Irritable Bowel Syndrome

• Rome III Criteria*
  – Recurrent abdominal pain or discomfort at least 3 days/month in the last 3 months associated with:
  
  Abdominal Pain/ Discomfort is prominent
  
  No red flags, alternating constipation/diarrhoea

  Diagnosis of Inclusion

stool

  – * Criterion fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis
Indicators of a functional diarrhoea

- Long duration symptoms (> 1 year)
- Lack of significant weight loss (<5kg)
- Absence of nocturnal diarrhoea
- Straining with defecation
  - Overall 70% specific for functional diarrhoea

- Diagnosis of exclusion

Rule out Dietary Cause

- Dairy products (lactose)
  - 95% estimate based on hydrogen breath test among Chinese Singaporeans
  - May worsen with GE

- Gluten intolerance (selective testing)
  - Celiac disease rare in Singapore

- Sorbitol (non absorbable sweetener)
- Alcohol, Caffeine

## Physical examination

<table>
<thead>
<tr>
<th>Physical finding</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin changes</td>
<td>Celiac sprue (dermatitis herpetiformis)</td>
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<tr>
<td></td>
<td>Mastocytosis (urticaria pigmentosa)</td>
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<td></td>
<td>Amyloidosis (macroglossia, purpura)</td>
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<td></td>
<td>Addison’s disease (hyperpigmentation)</td>
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<td></td>
<td>Glucagonoma (migratory necrolytic erythema)</td>
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<tr>
<td></td>
<td>Carcinoid syndrome (flushing)</td>
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<tr>
<td></td>
<td>Degos’ disease (malignant atrophic papulosis)</td>
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<td></td>
<td>Peripheral neuropathy, orthostatic hypotension</td>
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<tr>
<td>Thyroid nodule</td>
<td>Medullary carcinoma of the thyroid</td>
</tr>
<tr>
<td>Right-sided cardiac murmur, hepatomegaly</td>
<td>Carcinoid syndrome</td>
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<tr>
<td>Arthritis</td>
<td>IBD, Whipple’s, infections</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>AIDS, lymphoma</td>
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<tr>
<td>Peripheral vascular disease/abdominal bruits</td>
<td>Mesenteric vascular insufficiency</td>
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</tbody>
</table>

Usually normal or non-diagnostic
Important to assess hydration and nutritional state
Making sense of investigations in chronic diarrhoea
Stool Analysis I

• Cultures
  – Routine, repeat and specific

• Fecal Calprotectin
  – Good accuracy in differentiating inflammatory from functional

• Other stool tests where utility is unclear/unavailable
  – Occult blood
  – White blood cells
  – pH (carbohydrate malabsorption), osmotic gap
  – Quantitative stool fat
  – Laxative assay

Role of Endoscopy

• Colonoscopy with ileoscopy
  – Sigmoidoscopy, if deemed unsafe
  – Biopsy even if macroscopically normal

• Gastroscopy with deep D2 biopsy
  – Histology for villous atrophy and giardiasis
  – Aspirate for bacterial overgrowth

• Capsule endoscopy and small bowel enteroscopy
  – Strong suspicion for small bowel disease

Role of Endoscopy in the management of patients with diarrhea. Gastrointest Endoscopy 2010
Role of Radiology

• CT and MR imaging
  – Small bowel lesions, pancreas
  – Enterography if available

• Barium radiography
  – Less often used

Small Bowel Bacterial Overgrowth

At risk patients
- Elderly
- Dysmotility (e.g., diabetes, scleroderma)
- Prior surgery
- Strictures, Diverticulosis

Diagnostic Tests
- Hydrogen Breath Testing
- Jejunal cultures (quantitative)
- Empirical antibiotics

Bacterial Overgrowth. Kirsh M. Am J Gastroenterology 1990
Pancreatic exocrine function

- Severe pancreatic insufficiency
  - Overt steatorrhea > 90% loss of function
  - CT imaging
- Mild-moderate pancreatic insufficiency
  - Fecal elastase
  - EUS, MR pancreas
- Trial of pancreatic enzyme replacement
When to suspect and diagnose neuroendocrine tumours (rare)

- **Clinical**
  - >1L volume, secretory-type, low potassium
- **Urine**
  - 5-HIAA (carcinoid syndrome), VMA /metanephrines (pheochromocytoma), Histamine (mast cell disease, foregut carcinoid)
- **Blood**
  - Vasoactive intestinal peptides (VIPOMA), Calcitonin (medullary Ca thyroid), Gastrin (Zollinger-Ellison syndrome), Glucagon (glucagonoma)
- **Radiology**
  - Octreotide scan, CT, PET-CT

Scarpa M et al. J Surg Oncol 2010
Case illustration - continued

• Investigations
  – Hb 12 g/L, Low B12
  – Normal electrolytes
  – Albumin 30 g/L
  – CRP 50 mg/L
  – Stool test: negative for standard pathogens and C difficile
Histopathology confirmed the diagnosis of Crohn’s ileitis, TB excluded
The patient responded to a course of prednisolone and was commenced on azathioprine
Pragmatic approach

- **Blood +/- mucus in stools > inflammatory**
  - Stool pathogen work up
  - Colonoscopy or sigmoidoscopy + bx

If unrevealing, consider
- Small bowel imaging
- Empirical antimicrobials
Pragmatic approach

- *Watery + response to fasting* > Osmotic
  - Review medications and diet
  - Specific breath test (lactose, SBBO)
  - Trial of elimination diet
Pragmatic approach

• Watery + no response to fasting > secretory
  – Stool cultures
  – Endoscopy: Gastroscopy + colonoscopy/ileoscopy + biopsy
  – Small bowel imaging: MR or CT enterography

  – Review surgical history
  – Trial of cholestyramine (GB or ileal resection)
  – Selective testing for neuroendocrine if s/s suggestive
Pragmatic approach

• **Steatorrhea** > Fatty
  – Verify on stool fat
  – Review history of pancreatic disease, surgery and alcohol!
  – Endoscopy to exclude mucosal diseases
  – CT or MR imaging: pancreas + small bowel
### Empiric Therapy of Diarrhea

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Agent</th>
<th>Dose</th>
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<tr>
<td>Opiates</td>
<td>Diphenoxylate</td>
<td>2.5-5 mg QID</td>
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<td>Loperamide</td>
<td>2-4 mg QID</td>
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<td></td>
<td>Codeine</td>
<td>15-60 mg QID</td>
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<td></td>
<td>Morphine</td>
<td>2-20 mg QID</td>
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<td></td>
<td>Tincture of opium</td>
<td>2-20 drops QID</td>
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<tr>
<td>Bile acid-binding resin</td>
<td>Cholestyramine</td>
<td>4 g once daily to QID</td>
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<tr>
<td>Fiber supplements</td>
<td>Psyllium</td>
<td>10-20 g daily</td>
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<td></td>
<td>Calcium polycarbophil</td>
<td>5-10 g daily</td>
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<tr>
<td>Others</td>
<td>Probiotics</td>
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Avoid in inflammatory diarrhea and rule out ileus and intestinal obstruction first

Don’t forget nutritional support!
Conclusion

• A targeted history focusing on differentiating functional from organic causes

• Differentiate chronic diarrhea into osmotic, secretory, inflammatory and fatty

• Plan the order of investigations accordingly