

Constipation

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The Problem

- Most common gastrointestinal disorder
- No universal agreement on definition
- Prevalence 8.2 of the western population
- 15-20% in the elderly (!risk factors!)
 - 50% of nursing home residents
- 3 times more common in women
- Quality of life is compromised

Rural third world residents

- Consume 60g of dietary fibre per day
- Up to 500g of stool per day
- Oroanal transit time up to 30-35 hours

Healthy westerners

- Consume 10-12g of dietary fibre per day
- 100g of stool per day
- Oroanal transit time up to 72 hours

Women have fewer and smaller bowel movements than men!

N Y Haboubi - BGS Aut 2009








American Journal of Nurse Practitioners, 2007

ROME III

2 or more of the following:

- <3 defecations per week
- Straining during at least 25% of defecations
- Hard or lumpy stools in at least 25% of defecations
- Manual manoeuvres to facilitate at least 25% of defecations, e.g. digital evacuation, support of pelvic floor
- Sensation of incomplete evacuation for at least 25% of defecations
- Sensation of anorectal obstruction/blockage for at least 25% of defecations
- Loose stool rare without use of laxatives
- There are insufficient criteria of Irritable Bowel Syndrome

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

Intestinal Fluids

- Up to 10L of fluid enters the small intestine (exogenous and endogenous sources) most fluid absorbed from the small intestine
- 1L of fluid crossing the ileocaecal valve into the large intestine per day
- Most of the fluid extracted by the colon leaving around 100mls of faecal water daily

Colonic Motility

- Segmenting contraction (promote mixing)
- Propagating contractions (propel colonic contents for short distance)
- High amplitude contraction (propagate distally for long distance)

Defecation

- Co-ordinated relaxation of the puborectalis and external anal sphincter
- Increased intra-abdominal pressure
- Inhibition of colonic segmenting activity

Colorectal age related changes

- No change in colonic transit time
- Decrease rectal sensation
- Decrease rectal compliance
- Increase sensory threshold for urge to defecate
- Decrease resting and squeezing pressure in the anal canal

Constipation
> 3 months



ALALRM features

Yes



Investigate
further



Chronic constipation

Primary

Secondary



Functional idiopathic



Medications,
Metabolic,
Endocrine,
Neurological,
Others...

→ Address
the cause

Classification of Idiopathic Constipation

1. **Normal transit constipation** (chronic idiopathic) – Most common
2. **Slow transit constipation** (diminished gastro colic reflex)
 - Decreased production of nitric oxide
 - Decreased volume of interstitial cells of cajal in the colon
3. **Defecatory disorders** (pelvic floor dyssynergia, dyschezia)
 - Inappropriate contraction of puborectalis and external anal sphincter

TREATMENT

- HYDRATION AND DIETARY MODIFICATION
- BIOFEEDBACK
- PHARMACOTHERAPY
- PEC
- SURGERY

FLUID

- DIMINISHED FLUID INTAKE LEADS TO CONSTIPATION? CONFLICTING EVIDENCE
- DEHYDRATION CAN LEAD TO LOW STOOL FREQUENCY/WEIGHT
- HIGH FLUID INTAKE IN THE ABSENCE OF DEHYDRATION DOES NOT IMPROVE CONSTIPATION

WHAT IS DIETARY FIBRE?

- SUBSTANCES WHICH RESIST DIGESTION BY ENDOGENOUS ENZYMES, BUT MAY BE FERMENTED BY COLONIC MICROFLORA
- PLANT COMPONENTS
 - NON STARCH POLYSACCHARIDE SUCH AS HEMICELLULOSES, GUMS, PECTINS
 - LIGNIN
 - RESISTANT STARCH

DIETARY FIBRE continued

- INCREASED STOOL WEIGHT/FREQUENCY
- POOR FIBRE INTAKE DOES NOT NECESSARY CAUSE CONSTIPATION
- GAS PRODUCTION FROM FIBRE FERMENTATION MAY LIMIT ACCEPTANCE OF FIBRE

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- Muller – Lissener S.A. 2005, Am J Gastro

EFFECTS OF FIBRE ON THE GI SYSTEM

- DELAYS GASTRIC EMPTYING
- ↑ FAECAL BULKING
- ↓ INTESTINAL TRANSIT TIME
- ↑ COLONIC FERMENTATION

TYPES OF FIBRE BASED ON SOLUBILITY

INSOLUBLE

- CELLULOSES, LIGNIN
HEMICELLULOSES
- ↓ TRANSIT TIME
- ↑ STOOL WEIGHT
- ↑ PERSISTALSIS
- WHOLEGRAIN
CEREALS/BREAD/PASTA/SEEDS

■ SOLUBLE

- PECTINS, MUCILAGES, GUMS,
β GLUCANS
- ↓ GASTRIC EMPTYING
- ↑ FERMENTABLE COMPARED
TO INSOLUBLE
- FRUIT, BEANS, LENTILS,
OATS

PROBIOTICS AND PREBIOTICS?

- NO EVIDENCE THAT THEY AFFECT THE BOWEL MOVEMENT

Laxatives

Laxation: describes the evacuation of formed faecal material from the rectum

How do they work?

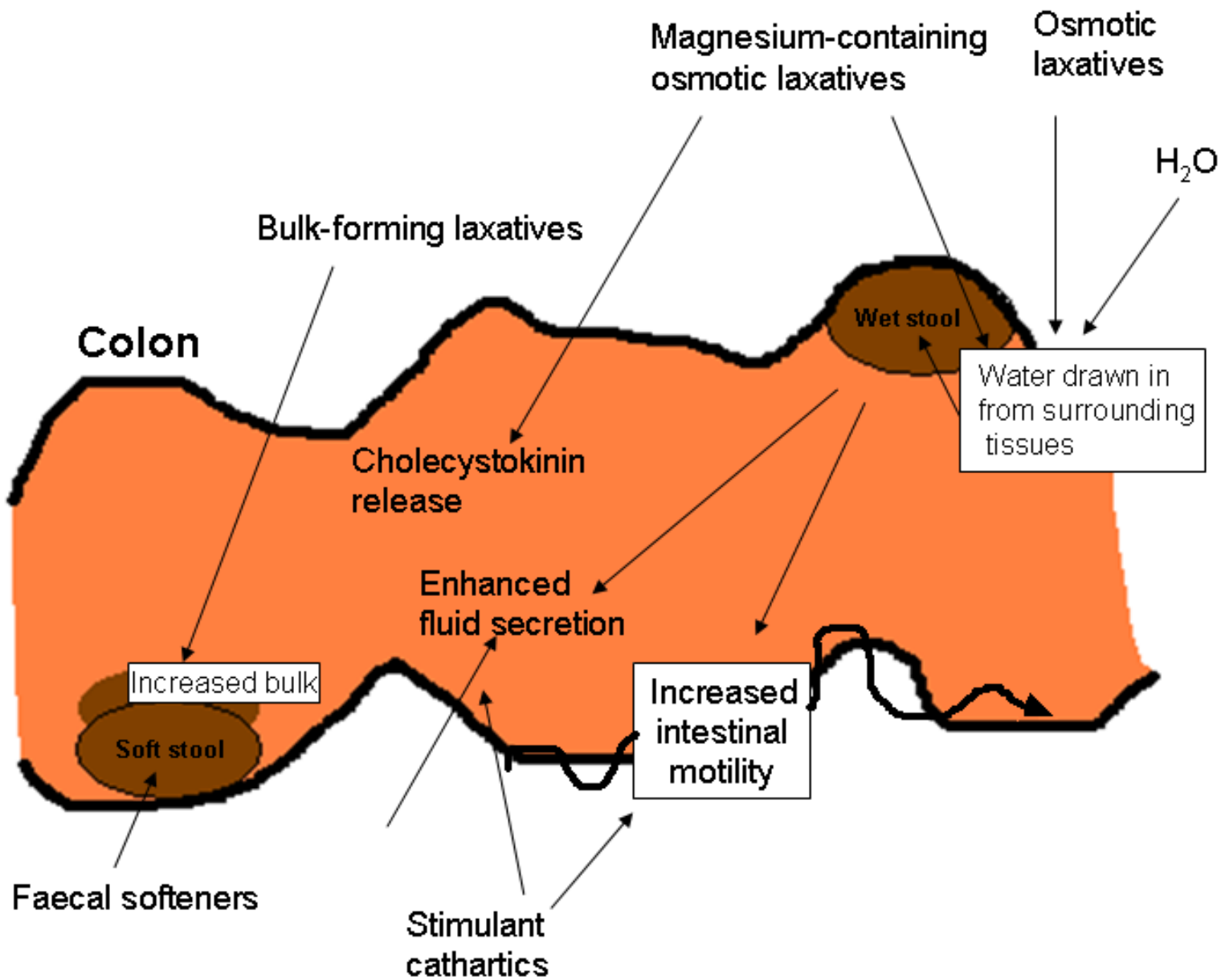
- Enhancing retention of intra-luminal fluid (hydrophilic and osmotic mechanism)
- Decreases net absorption of fluid (effect on fluid and electrolyte transport)
- Enhance fluid secretion and motility

Laxatives cont...

- Increases activity of nitric oxide (NO nitric oxide stimulate intestinal secretion and inhibit segmenting contraction)
- Increases biosynthesis of Platelet Activating Factor (stimulate colonic secretions and GI motility)
- Increases the release of cholecystokinin (CCK) – stimulate motility and secretion
- Alter motility by either inhibit segmenting non-propulsive contraction or stimulating propulsive contraction

Types of Laxatives

1. Bulk forming
2. Faecal Softeners
3. Osmotic Laxatives
4. Stimulant Laxatives



Bulk-forming laxatives

- Bran, ispaghula husk (Fybogel), sterculia (Normacol), methylcellulose (Celevac)
 - Increase weight and water absorbent properties of stool
 - Acceleration of luminal propulsion
 - Takes several days to work
 - Patient needs to drink plenty of fluids
 - Can cause flatulence, distension and spasmodic abdominal pain
 - Indicated in patient with normal transit constipation

Faecal Softeners (Lubricating Agents)

- Liquid paraffin,
 - Coats the rectum and provide lubrication
 - Indicated in painful defecation
- Arachis oil enema (peanut oil)
- Glycerol suppositories (stimulant & softener)
- Ducosate Sodium (stimulant & softener)

Osmotic Laxatives

- Magnesium salt
 - Takes several days to work
 - Can cause renal impairment
- Lactulose, Sorbitol
 - Non absorbable disaccharide - fermentable in the colon
 - Can cause bloating and abdominal cramps
- Polyethylene glycol (PEG-macrogols), e.g Movicol
 - High molecular weight, non toxic, create watery bulk
 - Promote peristalsis
 - Not fermentable by colonic micro flora
- Phosphate Enema

Stimulant Laxative

- Diphenylmethane derivative (Bisacodyl)
- Senna
- Sodium Picosulfate (Dulco-lax)
- Dantron (Co-Danthramer) – terminally ill patient's
 - 6-12 hours

Prokinetic Agents

■ Erythromycin

- Macrolide antibiotic, stimulate gastric and intestinal motility
- Direct action on motilin receptors on enteric neurones and smooth muscle cells
- Increase pressure of lower oesophageal sphincter

■ Misoprostol

- Synthetic prostaglandin E1 analogue
- Shorten colonic transit time
- stimulates intestinal electrolytes and water secretion
- Therapeutic value ?

Prokinetic agents cont...

■ Neostigmine

- Cholinesterase Inhibitor
- Enhance parasympathetic activity
- Increase intestinal motility
- Used in colonic pseudo-obstruction

■ Metoclopramide & Domperidone

- Dopamine D₂ receptor antagonists
- Extra pyramidal effects
- Not effective in constipation

- Tegaserod (not licensed in the UK)
 - Partial 5-HT₄ receptor agonist
 - Approved by the FDA
 - Licensed in Switzerland
 - IBS – constipation (women only)
 - Functional constipation (men & women <65)
 - Ischaemic colitis (very rare)
 - Cardiovascular events (very rare)

■ Botulinium toxin

- Injection of Botox into pubo-rectalis muscle (to induce relaxation)
- Further studies needed

■ Lubiprostone

- Chloride Channel Stimulant
- FDA approved, not yet licensed in the UK

Thank you