The Neurogenic Bowel - Pathophysiology, Assessment and Management
Conservative management - lifestyle and rehabilitative treatments
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Intake (Drake 2013, Unger 2014, Bauer 2012)
Social and family
• Caregiver availability
• Patient anxiety or depression related to bowel routine
Cognitive ability - Mini mental test
Bowel habits
• 2 week bowel diary
  o http://www.aboutibs.org/store/viewproduct/PDD
  o http://www.med.umich.edu/1libr/MBCP/BowelDiary.pdf
• Frequency of bowel movements and fecal incontinence
• Consistency of bowel movements - Bristol stool
• Current and past management - laxatives, fiber, enema, suppository, evacuation methods
• Common aggravating factors - foods, fluids, medications, stress, other circumstances that increase or decrease bowel activity
• Specific sensations related to need to defecate: abdominal fullness, increased spasticity, autonomic dysreflexia
• Sensation of incomplete bowel emptying
• Pain with defecation
• Position on the toilet, aids used (swatty potty)
• Initiation of defecation
  o Voluntary, spontaneous
  o Increased intra-abdominal pressure abdominal straining
  o Stimulated evacuation digital stimulation

Physical Examination (NICE 2012, Drake 2013)
• Sensation of S2-5: sharp/dull, light touch
• Reflex S4 - anal wink
• Skin irritations
• Function
  o ROM of lower body for positioning on the toilet
  o Mobility for ambulation to the bathroom and transfers on and off toilet
  o Finger dexterity for undressing, hygiene
  o Length of the patient’s arms and ROM - ability to reach rectal area
  o Strength in the upper and lower extremities
  o Sitting balance
• PFM function
  o Digital PFM examination for weakness or spasm per rectum
  o Superficial EMG assessment of PFM for contraction and valsava test for paradoxical PFM contractions during bearing down

Evidence for conservative management of patient with neurogenic bowel dysfunction
• Little high level evidence for any one treatment
  o Krassioukov 2010 - systematic review
  o Coggrave 2014 - Cochrane
  o Paris 2011, Awad 2011 - literature review
  o Drake 2013 - ICI guidelines
• Treatment of neurogenic bowel "has remained essentially unchanged for several decades" (Krassioukov 2010)
• ICCS neurogenic bowel evaluation and management - "Paucity of level 1 or level 2 publications" (Bauer 2012)
• Cochrane 2014 "There is still remarkably little research on this common and very significant issue" (Coggrave 2014)

Overall conservative management of neurogenic bowel
• Individualized to the patient in cooperation with caregivers - consider the time it takes for bowel care
• Establishment of a "bowel program" = all-inclusive treatment plan aimed at fecal continence (avoiding FI) and efficient evacuation (avoiding constipation) and prevention of complications (Engkasan 2013) - Balance between FI and constipation
• Which includes regular bowel emptying, continence, independence (Rawashdeh 2012)
• Multifaceted bowel programs are the first line approach (level 4) (Krassioukov 2010)
• Work as a team - MD, PT, OT, RN, dietary, others

Things it would be helpful for rehabilitation staff to know
• Motility of bowel and any treatments being used by patient for that reason
• Anorectal sensation - hypersensitivity or decrease
• EAS and or IAS defects
• Results of defecography or diagnosis of paradoxical sphincter contraction
• Physician plan of care - therapy can reinforce MD plan of care

Most researched treatments - all have level 3 evidence (Drake 2013)
• Multifaceted bowel programs
• Digital rectal stimulation
• Abdominal massage
• Electrical stimulation
• Patient and caregiver education
Optimize stool consistency
- Soft enough to pass easily, Solid enough to stay in rectum
- Reflexic evacuation = soft formed stool
- Areflexic evacuation (manual) = firm stool
- I am not a dietician and will give only limited info on diet and fluid changes.
- MD will cover choices of fiber supplements, enemas, stool softeners.
- Foods that increase bowel motility: spicy foods, fatty foods, milk products
  - Avoid caffeine, alcohol, and sorbitol to avoid loose stools (Drake 2013)
- Foods that increase gas: beans, corn, onions, peppers, radish, cauliflower, turnips, cucumbers, apples, melon, broccoli, smoking, chewing gum
- Foods that stiffen feces: cheese, banana, whole grains, vegetables
- Adequate fiber intake
  - Many recommend 15 to 30 mg fiber per day
  - Do not assume dietary fiber affects the transit time of pts with SCI the same as those without neurological dysfunction and it might even result in undesirable changes (Cameron 1996)
  - LMN gut = slow motility - low fiber diet to avoid bloating and gas (Drake 2013 - level B)
  - Parkinson's - insoluble dietary fiber improved stool consistency and increased stool frequency - level 3 (Drake 2013)
- Adequate fluid intake
  - Some evidence that carbonated water improved constipation scores in pts with CVA. (Coggrave 2014)
  - Water intake of more than 2 liters per day was associated with longer bowel care time in pts with SCI (Engkasan 2013)
  - Intake of caffeine may stimulate bowels to empty and can be suggested before bowel program (not during the day while off commode)
- Physical illness, medications, and stress affect bowel motility

Characteristics of bowel management programs for patients with SCI (Engkasan 2013)
- 52% have been using current bowel program for more than 5 years
- 79.2% use 2 to 4 interventions
- 76% learned the program from a health professional
- Defecation every other day (51.2%)
- In the morning (47.2%)
- Upright (72.8%)
- Independent care (56%)

Bowel management in pts with SCI (Adriaansen 2015)
- 74% use more than one conservative bowel management method
- digital evacuation 35%
- mini enemas 31%
Common pattern of bowel training program (Benevento 2002)

- Upright position on commode
  - Supine / legs straight - closes anorectal angle, less PFM relaxation for defecation
  - Upright uses effect of gravity (Drake 2013)
  - Bending forward, feet up on stool can open anorectal angle (swatty potty)
  - Good safety on commode - height of commode, side rails

- Privacy and comfort
- Relaxation, breathing
- Performed the same time every day (or every other day)
- Slightly quicker success with AM versus PM bowel schedules (Venn 1992)
- Gastrocolonic reflex - stimulation of peristalsis 30 mins after AM meal esp fatty or protein rich foods
- Adaptive devices - suppository inserter, digital stimulator
- Usually takes 30 to 60 minutes

UMN bowel syndrome, or hyperreflexic bowel - tight sphincter, evacuate with reflex stimulation
- Reflexic evacuation = soft formed stool
- Suppository or enema is inserted - wait 5 to 10 minutes
- Digital stimulation
  - Lubricate index finger and use a circular motion in the anal canal
  - For 20 to 60 seconds every 5 to 15 min until rectum is clear
  - Cautions to avoid aggressive manipulation to avoid autonomic dysreflexia and rectal mucosal injury (Drake 2013)
  - Digital stimulation - resulting in EAS relaxation and increased peristalsis (Korsten 2007, Shafik 2000, Drake 2013 level 3)
- Drinking warm liquid right before bowel evacuation
- Abdominal massage right before bowel evacuation
- Shifting weight side to side can shift position of colon to increase emptying
- Stimulation of skin around anus to initiate peristalsis

LMN bowel syndrome, or areflexic bowel - slow motility and weak sphincter
- Areflexic evacuation (manual) = firm stool
- Manual evacuation - break up stool with index finger and gently pull the stool out
- Bearing down / valsava - to advance feces, avoid in pts with SCI above T6 prone to autonomic dysreflexia (Drake 2013 level B, Furusawa 2011)

Conservative management (toilet sitting, biofeedback, anal plug, enemas) resulted in fecal continence in 67% of pts with spina bifida (Velde 2013)
Abdominal massage

- **Method** - make small circles starting at the right lower quadrant (appendix area) advancing clockwise to the right lower ribs, across to the left ribs and down to the left lower quadrant following the large intestine. gentle pressure, 10 times round
- **Purpose** - to increase or facilitate peristalsis and movement of fecal matter
- **When** - can be performed before / during defecation or at another time
- **Evidence**
  - Abdominal massage plus lifestyle advice was compared to lifestyle advice alone in patients with MS for the treatment of constipation. One outcome measure was significantly improved, one outcome measure did not change. Treatment effect stopped when treatment stopped. (McClurg 2011).
  - Bowel massage versus no massage in pts with CVA favors massage for increased BM per week. (Coggrave 2014)
  - Bowel massage in pts with SCI 15 min per days resulted in increased transit time (Ayas 2006)

Electrical stimulation (ES) (summarized in Drake 2013, Paris 2011, Krassioukov 2010)

- **Evidence** that various ES techniques may increase transit time
- **External abdomen ES (overnight)** in pts with SCI favors treatment over no treatment for decreased bowel care time (Korsten 2004) level 1
- **External abdominal ES, 25 min per day** - level 2
- **Functional sacral nerve root magnetic stimulation** (3 studies) - SCI and Parkinson's: shorter transit times, improved bowel routine, increased rectal pressure, decreased hyperactive rectal contraction
  - Thoracic (level 4)
- **Interferential electrical stimulation for constipation in children with myelomeningocele** (Kajbafzadeh 2012) - 250us, 20 min, 3 times per week, over the abdomen
  - Results - frequency of defecation increased from 2.5 per week to 4.7 times per week, sphincter pressure and rectoanal inhibitory reflex significantly improved compared to sham
- **Posterior tibial nerve ES** - incomplete SCI (level 4)

Biofeedback for patient with neurogenic bowel dysfunction - many different types

- **EMG** for strength of weak PFM for FI, relaxation of spasm PFM with constipation
- **EMG coordination training** for paradoxical PFM contractions during bearing down
- **Rectal balloon sensation training** for FI, balloon expulsion retraining for constipation

Biofeedback (Paris 2011)

- 6 studies found including treatment for children with myelomeningocele (best results), MS, diabetic neuropathy
- overall 33% to 66% of patients felt the biofeedback was helpful.
- Suggests best candidates have mild to moderate disability, persistent rectal sensation, and good motivation
Biofeedback for bowel dysfunction in pts with MS (Wiesel 2000)
  o 2 to 5 sessions over 4 to 6 months
  o Therapy included: bowel retraining, medication, rectal sensation training and PFM training
  o Only predictor of success was mild to moderate disability and stable disease process
  o 5 of 13 pts reported marked to moderate benefit with some able to decrease medications
  o No change was reported in outcomes measures

Evidence for biofeedback not specific to neurogenic bowel
Cochrane on idiopathic constipation - "Currently insufficient evidence to allow any firm conclusions" (Woodward 2014). No one type of biofeedback is better than another.

Predictors of success in biofeedback therapy in patients with constipation (Shim 2011)
  • Harder stool
  • Shorter duration of laxative use
  • Higher straining rectal pressure
  • Prolonged balloon expulsion
Training included: toilet behavior, abdominal breathing, anal relaxation during bearing down, balloon expulsion retraining, and rectal sensory retraining

Predictors of success with biofeedback therapy in patients with AI (Fernandez-Fraga 2003)
After multivariate analysis
  • 30% of patients with abnormal defecation mechanics failed treatment - those under 55 yo did more poorly than those over 55 yo
  • Overall older pts (over 55 yo) had a better response to treatment

Other treatments
  • Overall activity level - common suggestions include increasing activity level such as walking if able to increase peristalsis but there is little evidence this helps. (Paris 2011)
  • Patient education and individual instruction in bowel care results in short term (less than 6 months) improvements in bowel function. (Harari 2004)
  • Collection and containment (Cottenden 2013)
    o Absorbent pads - difficult to contain large FI, concern with odor
    o Anal plugs - level 3 evidence of success but may be uncomfortable in adults
    o Rectal trumpet - level 3
    o Eternal anal pouch - level 3 but should not be used on broken or thinned skin
    o Rectal catheter

Patient suggestions
  • Have a cleanup kit with them at all times
    o Change of cloths
    o Wet wipes and plastic bag for dirty wipes and cloths
    o Pads / diapers
    o Over the counter anti - diarrheal or upset stomach medications
  • Patients must understand factors that increase and decrease their own bowel transit
  • Cotton ball at the rectum - helps hold small FI in standing patients (not in w/c pts)
References


