The management of constipation in hospital inpatients

This article reviews the causes of constipation in hospital and how it can be prevented with simple measures. A review of laxatives available on hospital wards is provided for the reader and recommendations are made.

Patients' concepts of constipation vary from not passing any stool for days to difficulty in evacuation, passing small pellety stools or a sense of incomplete evacuation. Sometimes patients may complain of diarrhoea as a result of constipation with overflow. The clinical definition of functional constipation is based on symptoms defined by the Rome criteria (*Table 1*) (Longstreth et al, 2006) which should be present for 12 weeks of the previous year and in more than one in four evacuations (Thompson et al, 1999).

However, in hospital, clinicians tend to be guided by patients' complaints as well as nursing observations. This review will focus on the factors leading to constipation in hospitalized patients and its management.

Diagnosis

Doctors are good at taking systematic histories that enquire about defecation. However, if a bowel problem is not the presenting complaint then it is unlikely that doctors will enquire further about a patient's bowel action during their hospital admission. It is then left to nurses to detect constipation or for the patient to volunteer that they have become constipated.

Doctors need to be alert to the seriousness of constipation; for instance a patient admitted with a subarachnoid haemorrhage and given strong analgesics should be co-prescribed laxatives at the same time to avoid straining which could lead to raised intracranial pressure and a worsening of the bleeding. Medical and nursing staff also need to appreciate that severe constipation can lead to faecal impaction especially in elderly patients who will then present with diarrhoea or faecal incontinence.

Table 1. Rome 2 criteria for constipation

Straining
Lumpy or hard stools
Sensation of incomplete evacuation
Sensation of anorectal obstruction
Manual attempt to help defecation (e.g. digital evacuation)
<Three defecations/week

From Longstreth et al (2006)

Reasons for constipation

Age

Hospitals tend to contain an elderly population. These patients can easily become constipated for any of the following reasons:

1. Walking with assistance, being chair bound and bed bound leads to an increasing relative risk of constipation (Kinnunen, 1991)
2. General frailty and lack of motivation means that elderly patients drink less fluid. Additionally, diuretic use leads to dehydration and increased water absorption from the colon resulting in a firm stool that is difficult to evacuate
3. Older patients tend to eat small meals resulting in a feeble gastro-colic reflex. This can be compounded by poor dentition or the loss of false teeth
4. Patients take multiple drugs that can cause constipation (below)
5. Older patients tend to have weaker abdominal and pelvic muscles – these are required to initiate defecation
6. Older patients tend to experience a reduction in anal resting pressure (internal sphincter) and anal maximum squeeze pressure (external sphincter) (McHugh and Diamant, 1987)
7. The elderly appear to have diminished anal sensation (Barrett et al, 1986)
8. There may be an association between reduced mobility and increased transit time (Oettle, 1991) leading to constipation in elderly patients.

Co-morbidity

Significant neurological disease such as dementia, stroke, Parkinson's diseases and multiple sclerosis means that patients may be unable to initiate defecation because of loss of central control.

Depression is also an important co-morbid association with constipation (Garvey et al, 1990), which can occur in the absence of marked anorexia and psychomotor retardation.

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Nutrition
An appropriate amount of fibre is required to hold water within the stool and to bulk up its contents. Hospital meals tend to lack fruit and fibre and patients meals may be interrupted or they may be 'nil by mouth' while awaiting a test. This leads to a reduced gastro-colic reflex – the phasic and tonic activity of the colon occurring 1–2 hours after a meal.

Toilet facilities
Defecation is under powerful central control that can be inhibited by the lack of privacy on wards. Use of commodes, shared and dirty toilet facilities can put patients off defecation.

Drugs
Analgesics, anticholinergics and antidepressants are a few of the drugs which may aggravate constipation by interfering with peristalsis.

Sleep disturbance
The process of waking up is followed by an increase in colonic smooth muscle activity leading to defecation. This reflex is likely to be lost in patients ventilated on the intensive therapy unit.

Examination
Abdominal examination of the constipated patient may reveal palpable stool in the sigmoid colon. Rectal examination may confirm stool and may also reveal possible causes for constipation such as painful fissures, prolapsing piles or ano-rectal cancer.

Treatment
Simple measures
Although there is no evidence to support increasing fluid intake in constipated patients it is important to avoid dehydration that leads to increased absorption of water from the colon and hard stools as a result. Patients and carers should be encouraged to choose the healthier options on ward menus although too much fibre can lead to pain and bloating as a result of bacterial fermentation. Patients' drug charts should be reviewed to avoid diuretics and other constipating drugs. Patients should be encouraged to be mobile and regular toileting encouraged.

Laxatives
A good laxative should be easy to take with few side effects but importantly be cost-effective.

Polyethylene glycol
Macrogols are synthetic inert polymers of ethylene glycol that are avid water binders, retaining fluid within the stool which helps lubricate faecal residue. Polyethylene glycol (PEG) solutions with a molecular weight of 3200–4000 are not absorbed and pass unchanged in stool. The electrolyte content of these PEG solutions is designed such that they are iso-osmotic and that there is no net water absorption, reducing the need for the patient to drink large volumes of water. This molecular design lessens the likelihood of side effects experienced with other laxatives such as dehydration or bloating.

These drugs were originally used as bowel cleansing solutions but more recently have been shown to be highly effective for the treatment of acute and chronic constipation. PEG 3350 (Movicol, Norgine Pharmaceuticals Ltd, Uxbridge) has been shown to be more effective than lactulose in the treatment of chronic constipation (Attar et al, 1999). Furthermore, it has been shown to be highly effective in treating faecal impaction (Chen et al, 2005) which commonly occurs in hospitalized patients. Importantly PEG 3350 has also been shown to reduce the laxative drug expenditure by 2000 euros (£1350) per month on a ward of patients with severe learning difficulties (Migeon-Duballet et al, 2006). Movicol is now available in a paediatric form for the treatment of constipation in children.

Osmotic laxatives
Lactulose consists of galactose and fructose and the taste is unpalatable for some patients. It tends to have a delayed onset of action compared to PEG solutions and some patients complain of bloating and gas because of colonic fermentation. The drug works by drawing water into the gut resulting in a watery stool but this can lead to dehydration in elderly patients. Although the drug is popular with pharmacies because of its cost, a review of laxative prescribing has concluded that PEG laxatives are more cost effective than lactulose (Ramkumar and Rao, 2005).

Bulking agents
Fibre supplements may be synthetic (methyl cellulose) or plant derived (ispaghula or sterculia). They add bulk to stool by a combination of water retention and increasing bacterial cell mass. However, they can take some days to work which reduces their effectiveness in hospital. Also the bacterial fermentation can lead to bloating and discomfort.

Stimulant laxatives
This group includes bisacodyl and anthranoids such as senna and dantron. They are pro-drugs that are converted to active metabolites stimulating peristalsis and defecation but can cause severe cramps. These drugs are cheap and effective and although the *British National Formulary* recommends avoiding these drugs long term because of concerns about developing an atonic colon there is no good clinical evidence for this statement. The exception to this is in frail or terminally ill patients where such drugs are appropriate. The use of anthranoids in particular can be detected by the presence of melanosis coli seen at colonoscopy; the pigment is derived from colonic epithelial cells that have died and been phagocytosed by macrophages.

Suppositories and phosphate enemas

These drugs act by a combination of direct chemical stimulation of the rectal mucosa and distension of the rectum that stimulates a defecatory reflex. This type of treatment is cheap and may be effective but usually requires a nurse to administer and for patients it is not as convenient as oral treatment. Care must be taken with phosphate enemas as they have been shown to cause serious electrolyte imbalance in patients who have not passed the enema (Rohack et al, 1985; Spinrad et al, 1989).

Conclusions

Constipation is common in the hospitalized population and the reasons for this are multi-factorial. Avoiding dehydration and constipating drugs is vitally important. Although lactulose is a popular laxative recent data suggest that Movicol is more cost-effective at relieving constipation. **BJHM**

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KEY POINTS

- The NHS spend on laxatives is millions.
- Constipation is common in elderly hospitalized patients.
- Bowel charts should be reviewed and laxatives co-prescribed when strong analgesia is prescribed.
- Drug charts should be reviewed regularly and constipating drugs avoided.
- A good laxative should be safe, easy to administer and cost effective.
- PEG 3350 (Movicol) is non-dehydrating and is superior to lactulose in treating constipation.
- Prescribing PEG 3350 appears to be cost effective and may reduce laxative spend on hospital wards.