

# Neurogenic bowel dysfunction: evaluation and treatment

Recent years have seen a major increase in our understanding of bowel dysfunction in people with central neurological diseases or injury. The most commonly studied conditions are spinal cord injury, multiple sclerosis, spina bifida, Parkinson's disease and stroke. The primary symptoms relate to constipation, rectal evacuation difficulties, faecal incontinence or some combination of these. These are common problems: 42-95% of spinal cord injury (SCI) patients experience constipation and 75% faecal incontinence at least once a year;<sup>1</sup> in multiple sclerosis (MS) 36-54% report constipation and 29-50% faecal incontinence;<sup>2</sup> one-third of Parkinson's disease (PD) patients report chronic constipation;<sup>3</sup> in spina bifida only 32% report normal bowel function.<sup>4</sup> These symptoms have a major negative effect on quality of life, reducing social integration and independence.<sup>5</sup>



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One special complication that occurs in some patients with neurogenic bowel dysfunction (NBD) is autonomic dysreflexia, the exaggerated sympathetic nervous system response to a noxious stimulus below the level of a cord injury. Bowel management can trigger dysreflexia, but this can also be induced by inadequate bowel care, so the balance is on careful stepwise bowel management to minimise the risk of this potentially serious outcome. The need for comprehensive bowel ma-

agement is further underlined by the increasing life expectancy of neuro-rehabilitation patients, and hence the increasing burden of management of bowel function both to the individual and the wider community.

## Evaluation

Symptom assessment depends on identifying any alarm symptoms that may signify sinister gut pathology, since issues like inflammatory bowel disease

and cancer occur with similar frequency in NBD patients as in matched non-NBD individuals. In addition anorectal problems are more common in this cohort<sup>6</sup> and need to be assessed and managed along standard lines if present: issues with haemorrhoids, anal fissure and rectal prolapse. Identifying what bowel function was like prior to onset of neurogenic bowel dysfunction symptoms is important in defining expectations of bowel care.<sup>6</sup> Key current symptoms to note are:

- frequency of urge to void rectum,
- bowel opening frequency,
- time spent per bowel episode,
- steps needed for emptying (laxatives, digital stimulation, carer help, etc.),
- episodes of urge faecal incontinence,
- episodes of faecal soiling,
- meal frequency and content.

These symptoms can be quantified using the validated NBD score<sup>7</sup>.

Digital assessment of sphincter contractile strength and pinprick assessment of perineal sensitivity obviate the need for formal anorectal physiology

## KeyPoints

- Constipation and faecal incontinence occur commonly in central neurological diseases.
- The pattern of colorectal and pelvic floor dysfunction depends on the specific pattern of neurological injury.
- Conservative treatment with dietary advice, oral laxatives and suppositories is helpful in a minority of subjects.
- Transanal irrigation is superior to conservative management and is a bridging therapy before more intrusive surgical options are considered.

studies in most cases. Similarly transit measurement is not needed for most patients – the quantification of urge frequency and stool consistency provides the necessary information (urge daily or less often alongside hard pellet stool usually signifies slow transit).<sup>8</sup> In treatment refractory patients, transit studies and anorectal physiology can help inform the management plan.<sup>9</sup>

## Treatment

Although the pathophysiology of bowel symptoms varies between the patient groups, treatment options are frequently similar. A stepwise approach to care is advocated,<sup>6</sup> as illustrated in Figure 1.

### Conservative bowel regimen

Initial management for all subjects is medication review (especially bladder anticholinergics and anti-spasmodics) and addressing any unusual dietary patterns. In general, scheduled defaecation should be attempted once a day or on alternate days. However, knowledge of bowel frequency prior to injury is critically important in deciding on the bowel programme. Advice about optimizing fluid intake needs to be balanced by the realities of bladder management.<sup>10</sup>

Patients with an upper motor neurone type bowel will tend to have slow whole-gut transit, and a high-fibre diet will tend to cause bloating and flatulence. In general reducing the fibre intake – especially of insoluble (i.e. cereal) fibre – is helpful in improving these symptoms. Patients with lower motor neurone type bowel may find that a higher fibre diet helps improve stool consistency and therefore prevent faecal soiling.<sup>11</sup> Excessive quantities of caffeine, alcohol and foodstuffs containing the sweetener sorbitol can cause the stools to become looser and hence more difficult to manage.<sup>12</sup> Bowel contractions are maximal on waking up and after a meal or warm drink (the gastro-colic response), therefore many patients should optimize this with scheduled defaecation after a warm drink and breakfast. Where

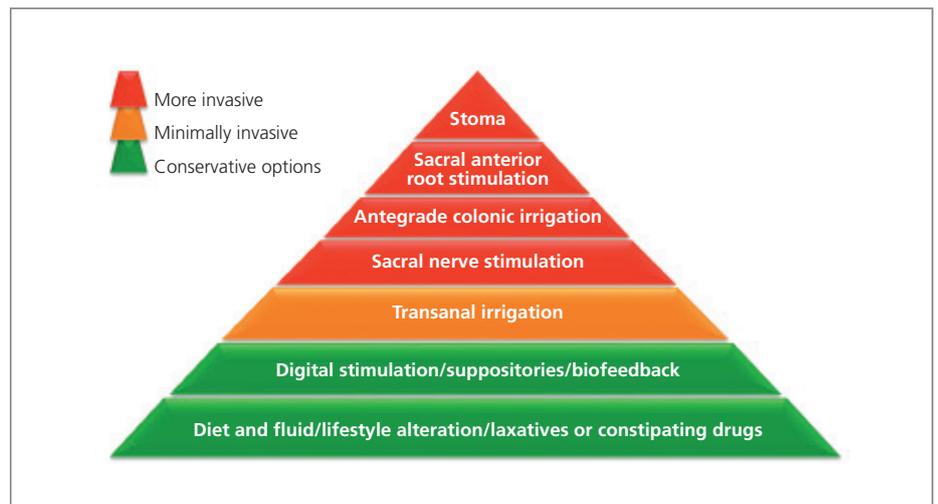


Fig. 1: Stepwise model of care for neurogenic bowel dysfunction

possible, it is best to exploit gravity to void the bowel, so where possible sitting on a toilet or commode chair is preferred. Of course in some patients this is not practicable, and toileting has to be done on the bed.

The following general components are part of the generic neurogenic bowel dysfunction programme; not all will work on a particular individual, and not all may be needed:<sup>6</sup>

- Abdominal massage
- Valsalva manoeuvre
- Digital anal stimulation with a lubricated, gloved finger (this process also serves as a useful check to see if there is any stool present in the rectum)
- Manual extraction of stool which can be combined with a Valsalva manoeuvre to improve effectiveness
- Anal plugs may help reduce small volume faecal incontinence
- Suppositories and enemas (retained for at least 10 minutes) may supplement the above by causing a reflex contraction of the rectum and are not needed when the rectum is empty on digital checking.

### Transanal irrigation

Transanal irrigation is a recent option to allow retrograde irrigation of the rectum via a catheter passed transanally. A balloon is inflated in the anal canal to avoid leakage of the tepid tap water that is used as the washout fluid, and this is then deflated some minutes

after between 200 and 500mL has been run through. A randomized controlled trial in spinal cord injury comparing transanal irrigation with standard conservative management<sup>13</sup> showed significantly better control of incontinence, time spent toileting and quality of life. Urinary tract infections were also significantly reduced. With increasing experience best practice of this technique has become established, with long-term benefit being identified in over 50% of patients with NBD.<sup>14</sup>

### Electrical stimulation therapies

Sacral nerve stimulation is a minimal surgical intervention in which one or more electrodes are implanted onto sacral roots. It is thought to non-specifically modulate both afferent fibres to the cortex and directly stimulate sacral efferents. Implants have been extensively used in neurologically intact patients with faecal incontinence and constipation. A first report of its use in patients with incomplete cauda equina lesions has shown efficacy in treating faecal incontinence in some patients.<sup>15</sup> Functional electrical stimulation with a sacral anterior root stimulator (implanted at laparotomy) is a major surgical procedure wherein electrodes are placed on the efferent sacral roots following a posterior rhizotomy (to avoid autonomic dysreflexia).<sup>16</sup> While usually implanted for bladder management, they have been shown to significantly improve bowel function.<sup>17</sup>

### Surgical stoma formation

Antegrade irrigation through an appendicostomy is an effective and practicable intervention in patients with spina bifida. Long-term efficacy is maintained in over 80% of children, but the success rates in adults are less impressive, with stenosis of the track developing in time.<sup>18</sup> In addition, some patients find difficulty with the time taken to wash out the whole colon while seated on a commode.

Although often regarded as the last step when all other forms of manage-

ment have failed, formation of a colostomy is sometimes the preferred option of a patient with good upper limb control and who finds it difficult to avoid incontinence with laxative use. Colostomy significantly reduces time spent with bowel care and improves quality of life.<sup>19</sup> It must, however, be borne in mind that patients with neurogenic bowel dysfunction may have significant adhesional and stoma-related morbidity.<sup>19</sup> In addition, patients often still need to use laxatives or stoma irrigation unless they opt for a loop ileostomy. ■

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