31

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ASSESSING INTERVENTIONS FOR NEUROGENIC BOWEL MANAGEMENT USING ANORECTAL MANOMETRY

Hypothesis / aims of study

Bowel dysfunction in central neurological conditions such as multiple sclerosis, spinal cord injury and spina bifida, contributes significantly to disability and impaired quality of life. There remains insufficient evidence to recommend any one intervention or mode of bowel management over another in any single patient group (1). In particular, there is little physiological evidence to support the use of most physical interventions for bowel management. These include stimulation of skin and anorectal reflexes, and abdominal massage. The primary aim of this study was to evaluate individual interventions for bowel management by measuring responses to forms of stimulation commonly used to assist in bowel evacuation after spinal cord injury (SCI) using anorectal manometry The secondary aim of the study was to evaluate the relationship between the bowel management interventions usually employed by the individual and their residual bowel function as determined by ano-rectal manometry.

Study design, materials and methods

Study participants maintained a bowel diary for two weeks prior to attending the study centre where a bowel management assessment and anorectal manometry protocol were conducted.
Anorectal manometry is the measurement of the pressures generated in the anal canal and rectum (2) and is used in the evaluation of patients with altered anorectal function resulting in constipation and faecal incontinence. A reduction in anal pressure and a rise in rectal pressure have been identified as the normal response to a full rectum (3); this equates to contraction of the rectum and relaxation of the external sphincter which are part of the defaecation process. Thus a rise in rectal pressure and a fall in anal pressure are the predicted responses to an effective intervention, against which responses to interventions will be compared. The use of manometry to assess the effect of interventions for bowel management after SCI has not been reported in the literature.

Results

A sample of 164 individuals was recruited; median age was 52 years (22-81years), median duration of SCI 16 years (1-51 years). Anorectal manometry was conducted on 124 participants; their injury level and density are shown in Table 1.

Table 1 Level and density of injury of individuals undergoing anorectal manometry.

	Cervical (% of total sample)	**Thoracic (% of total sample)**	**Lumbar (% of total sample)**	**Total**
Complete	15(9.1)	41 (25.00)	2 (1.21)	58 (35.36)
Incomplete	29 (17.6)	28 (17.07)	9 (4.87)	66 (39.63)
Total	44 (26.82)	69 (41.46)	11 (6.09)	124 (74.39)

Median manometric resting anal pressure was 58.20mmHg (range 7.51-135.82), which is within the lower end of the normal range. Mean resting anal pressures previously reported in SCI individuals range from 46mmHg to 64.5mmHg. A range of responses to interventions conducted during manometry were identified including: increases or reductions in anal/rectal pressure, increased rectal and reduced anal pressure (the predicted response to effective stimuli), vibration (rapid small variations in the pressure recorded indicating a change in colonic activity) and instability (see Figure 1). The frequency of response was highly variable (Cochran' Q 38.884, p=<.001); abdominal massage produced a response most consistently (in 98%) while ano-rectal stimulation produced the predicted response to an effective intervention most frequently. There was no significant difference in frequency of response to interventions between individuals of different levels or densities of injury except for lower abdominal stimulation to which individuals with incomplete injuries were significantly more likely to respond (X^2 4.84, p=.04). There was no association between presence of a rectal balloon to simulate stool and response to stimulation. There was no association between responses to interventions measured by manometry and the interventions regularly employed by participants; those who responded to anorectal stimulation during manometry were no more likely to use it during bowel management than those who did not respond. There was no association between residual anorectal function as identified by ano-rectal manometry findings and the outcomes of bowel management.

Figure 1. Response to abdominal massage in an individual with thoracic (T6)paraplegia. The segment shows rectal vibration and spiking rises in anal pressure.

Interpretation of results

Skin touch stimuli appear to be of little value in eliciting any ano-rectal response in SCI individuals. Anorectal stimulation is used to prompt movement of stool from sigmoid to rectum and to trigger reflex evacuation of stool in individuals with reflex bowel function. It prompted the effective response in only 53% of suitable individuals and so may be less effective than previously thought. Abdominal massage for bowel care is a method of promoting movement of stool through the bowel rather than as a trigger for evacuation; it drew a near universal response suggesting it may have a real effect on rectal activity. Changes in rectal and anal pressures were recorded as soon as massage commenced in the right lower quadrant. While it is not possible to equate a change in anal and rectal pressures with efficacy, these findings do suggest that abdominal massage warrants further rigorous evaluation. The lack of association between residual anorectal function as identified by anorectal manometry and interventions used by study participants may indicate that individuals are currently using interventions that are not optimal for them, resulting in prolonged and ineffective bowel management.

Concluding message

Skin touch stimulation is of no value in neurogenic bowel management after SCI. Anorectal stimulation results in the desired response in around 54% of individuals with reflex bowel function; the efficiency of the intervention should be rigorously evaluated clinically with rehabilitating SCI individuals so that bowel management is not prolonged by using an inappropriate technique. Abdominal massage has a demonstrable effect on anal and rectal pressures and further research is required to explore this intervention. The lack of any relationship between responses to interventions and individual and injury characteristics underlines the need for individualised assessment and planning of care in the management of neurogenic bowel dysfunction. As the effects of massage appear almost universal and only response or not to anorectal stimulation could be explored, the use of anorectal manometry in determining the appropriate bowel management interventions for SCI individuals in a clinical setting may not be justified.

References

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FUNDING: Action Medical Research - Research Training Fellowship
HUMAN SUBJECTS: This study was approved by the Vale of Aylesbury Local Research Ethics Committee and followed the Declaration of Helsinki Informed consent was obtained from the patients.