Transanal Irrigation in the Management of Neurogenic Bowel Dysfunction

Abstract

Many patients with a spinal cord injury (SCI) or spina bifida suffer from neurogenic bowel dysfunction which causes significant physical and psychological morbidity. For the last four years at the National Rehabilitation Hospital, transanal irradiation (TAI) has been offered to patients who were dissatisfied with a conservative bowel management programme. This is an observational study of eleven patients who were offered TAI. Three questionnaires, scoring bowel symptoms at baseline and follow-up (3-28 months) were completed by patients. Nine patients had a SCI and two had spina bifida, mean age was 44 years. A reduction in mean scores for all three questionnaires occurred post TAI (39.5-42.1%) indicating fewer bowel symptoms. Statistically significant reductions in faecal incontinence (p<0.05), abdominal pain (p<0.05) and lifestyle alterations secondary to bowel management (p<0.05) occurred. No serious adverse events occurred during the study. TAI is an effective treatment option for the management of neurogenic bowel dysfunction.

Introduction

Spinal cord injury (SCI) may lead to neurogenic bowel dysfunction which causes changes in bowel motility and sphincter control and frequently has a major impact on the wellbeing of patients. Symptoms include faecal incontinence, constipation, abdominal bloating and pain. After loss of mobility it has been described as the most distressing aspect of SCI and studies indicate that symptoms tend to deteriorate with time. Neurogenic bowel dysfunction also occurs in spina bifida. In one large Nordic study of 527 children with spina bifida, 75% reported suffering moderate to severe psychological distress as a result of their bowel symptoms. Many perceived bowel incontinence as more distressing than impaired motor function.

Guidelines for the management of neurogenic bowel dysfunction post SCI, produced by the Spinal Cord Injury Centre of the UK and Ireland (2005), recommend that the aim of bowel management should be to achieve predictable and regular emptying of the bowel at a socially acceptable time and should be completed in a reasonable time suggested to be one hour. There is a lack of research evidence to support bowel management programmes post SCI and studies that have been published have been limited by small sample sizes. Bowel programmes currently recommended in the management of SCI patients include regular toileting, utilising the gastrocolic reflex, dietary modification, abdominal massage, oral laxatives, rectal suppositories, digital stimulation and digital evacuation of the rectum alone or in combination are termed conservative bowel management.

Recent studies have confirmed the safety and efficacy of transanal irrigation (TAI) in the management of neurogenic bowel dysfunction. TAI can result in lower healthcare costs than conservative bowel management without risk, as indicated by one published case study of a 54 year old lady post SCI who suffered a perforation of the rectum while using TAI. Previous estimates suggested that one non-fatal bowel perforation necessitating emergency surgery occurred in approximately 1/50,000 irrigations. However new figures released by the Medicines and Healthcare Regulatory Agency, United Kingdom (2011) estimate that risk to be lower than 1/100,000 irrigations the last four years at the National Rehabilitation Hospital, we have offered TAI to those patients with neurogenic bowel dysfunction who have been dissatisfied with results from conservative neurogenic bowel management. The objective of this study is to report on the outcomes for patients who have commenced TAI at our centre.

Methods

This is an observational study of patients using TAI at the National Rehabilitation Hospital. From July 2007 through to December 2009, eleven patients with a SCI or spina bifida and neurogenic bowel dysfunction who had not achieved a satisfactory outcome with conservative bowel management were offered TAI. Each patient with a SCI had been classified prior to the study according to the international standards for neurological classification of spinal cord injuries based on spinal segment damaged. For the purpose of the study, patients were classified as having either a complete or incomplete injury. Two patients had spina bifida. The suitability of patients for TAI was confirmed by a consultant in rehabilitation medicine and a specialist nurse, before training was initiated. Demographic data and 3 different questionnaires scoring bowel symptoms at baseline. Patients completed the Cleveland Clinic Constipation Scoring System (CCCSS) (0-30 with 30 representing severe symptoms), St. Marks Faecal Incontinence Grading Score (SMFIGS) (0-24 with 24 representing severe symptoms) and the Neurogenic Bowel Dysfunction Score (NBDS) which scores each symptom of bowel dysfunction according to its impact on the patients quality of life (range 0-47 with 47 representing severe symptoms). Follow-up scores were obtained at varying time intervals (3-28 months) by the specialist nurse using telephone interview. The end point scores of our study were reductions in questionnaire scores at follow-up indicating fewer bowel symptoms.

Statistical analysis of the data was performed using SPSS/PC (SPSS Inc., Chicago, IL, USA), version 16. Changes in continuous variables were obtained for all three questionnaires repeated measures t test was conducted to examine differences in the questionnaire scores over time. Variables used in the three questionnaires included categorical and ordinal variables which were analysed using the McNemar and Wilcoxon signed rank tests. Tests with p<0.05 were deemed to be statistically significant.

Figure 1: Peristeen TAI System

Figure 2: Peristeen Catheter in Rectum
Results
Eleven patients took part in the study, questionnaires were completed pre- and post- TAI. Demographic details are recorded in Table 1. Ages ranged between 27 and 72 years, with a mean age of 44 years. There were four females and seven males. Nine of the patients had a SCI and two had Spina Bifida. Prior to starting TAI, patients completed the questionnaires. Two patients filled out the questionnaires retrospectively (patients 1 and 2) as both had commenced TAI prior to the commencement of the study. Seventy of symptoms at initiation of TAI was compared with seventy of symptoms at follow up (3-28 months). A statistically significant decrease in the mean scores for all three questionnaire scores occurred at follow-up indicating a significant reduction in bowel symptom scores post TAI.

An analysis of the specific variables using the Wilcoxon Signed Rank Test indicated that a statistically significant reduction in incontinence for solid stool (p<0.05), liquid stool (p<0.05) and flatus (p<0.05) occurred post intervention. Patients perceptions of lifestyle alteration secondary to bowel evacuation difficulties were addressed on the St. Mark’s Faecal Incontinence Grading Score and a significant decrease (p<0.05) in the frequency of lifestyle alterations related to bowel management occurred post TAI. Significant reductions in abdominal pain (p<0.05) and bloating (p<0.01) also occurred. All patients apart from one (Patient 11) expressed their wish to continue with TAI at the end of the study and no major adverse events occurred during the study period. Problems experienced included burst balloons and associated leakage of bowel contents which have been documented previously. Clostridium difficile infection but was able to resume TAI post completion of treatment. This patient also underwent surgery for a urostomy during the study period. TAI was stopped temporarily and was successfully restarted.

Discussion
This study confirms the findings of previous studies, that TAI improves symptoms and quality of life measures in patients with neurogenic bowel dysfunction. However the positive results obtained may reflect the fact that the majority of patients (8) were followed up at three to nine months. Benefits from TAI have previously been shown to deteriorate with time (80% success rate at 3 months, 46% at 19 months and 35% at three years) 46:198-203.

To date there are no guidelines on selecting specific subgroups of patients with neurogenic bowel dysfunction for TAI. Our group was predominantly male (7 males and 4 females). One previous study demonstrated that a positive response to TAI was more likely in males with mixed constipation and incontinence symptoms; however in that study confidence intervals were wide and a trial and error approach was recommended by the authors.

TAI has been found to be a cost effective option for bowel management when compared with conservative bowel management programmes. A comparison of costs was not assessed for the purpose of this study. It is worth noting that TAI is available to spina bifida but not to SCI patients through the Long Term Illness Scheme in this country. In the United Kingdom, it is available to all patients through the National Health Service. As has been noted in previous studies, we found that TAI was a safe and effective treatment option for neurogenic bowel dysfunction and significant adverse events did not occur in this cohort of patients. However, since the time of cessation of the study, one of our patients suffered a rectal perforation requiring intensive care management for the resulting profound sepsis and a colostomy for ongoing bowel care. There have been reports of non-lethal rectal perforations with TAI and the estimated frequency of these perforations is <1/100,000 irrigations. Until now, we had followed the manufacturers guidelines regarding training in the use of TAI. Since the case of rectal perforation, we are compiling our own policy & procedure document for TAI and this nears completion. All new referrals for TAI at National Rehabilitation Hospital will now be informed that there has been a case of rectal perforation in our service.

The main limitation of this study is that patients were followed up at varying time intervals post commencement of TAI. Ideally all patients should have follow-up at the same time intervals to establish more robust outcome measures. Continued follow-up of patients would also give a better indication of response to TAI over time and particularly whether satisfaction declines as was noted previously. 46:198-203 Also notable is that 2 patients completed pre TAI symptoms scores after commencing treatment which may have been associated with a tendency to over-report negative symptoms. In conclusion, this study supports the use of TAI in Irish SCI and spina bifida patients with neurogenic bowel dysfunction who do not experience a satisfactory outcome with conservative bowel management. A larger study comparing TAI to conservative bowel management, including cost-effectiveness of both, with follow-up at regular intervals over a longer time period would give a more comprehensive guide to its efficacy in this population and may facilitate its availability through the Long Term Illness Scheme to SCI patients.

Correspondence: C Loftus
Rock Court Medical Centre, 40 Main St, Blackrock, Co Dublin
Email: closh loftus@gmail.com

References
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