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Transanal irrigation for the treatment of neuropathic bowel dysfunction

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Abstract *Introduction:* Children with spinal cord lesions very often experience bowel dysfunction, with a significant impact on their social activities and quality of life. Our aim was to evaluate the efficacy of the Peristeen transanal irrigation (TI) system in patients with neuropathic bowel dysfunction (NBD).
Material and methods: We prospectively reviewed 40 children with spina bifida and NBD who did not respond satisfactorily to conventional bowel management and were treated with the Peristeen TI system. Dysfunctional bowel symptoms, patient opinion and level of satisfaction were analysed before and during TI treatment using a specific questionnaire.
Results: Thirty-five children completed the study. Mean patient age and follow up were 12.5 years (6—25) and 12 months (4—18), respectively. Average irrigation frequency and instillation volume were once every 3 days and 616 ml (200—1000), respectively. Bowel dysfunction symptoms including faecal incontinence improved significantly in all children. Patient opinion of intestinal functionality improved from 2.3 ± 1.4 to 8.2 ± 1.5 ($P < 0.0001$) and mean grade of satisfaction with the Peristeen system was 7.3. Patient independence also improved from 28 to 46% and no adverse events were recorded.
Conclusions: TI should be used as a first therapeutic approach in those children with NBD who do not respond to conservative or medical bowel management before other more invasive treatment modalities are considered. The Peristeen system is as effective as other TI methods, but it is easy to learn, safe and increases the patient's independence.

Introduction

Children with spinal cord lesions such as myelomeningocele (MMC) very often experience bladder and bowel dysfunction. They may suffer constipation, faecal incontinence or both, and these may have a significant impact on their

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social activities and quality of life as well as decrease their self-esteem [1,2]. However, while urological sequelae and their treatment are well documented, neuropathic bowel dysfunction (NBD) management is less so, perhaps due to the misperception that it has a less serious morbidity than bladder dysfunction. Management of NBD has often involved diet and mild laxatives combined with enemas or digital maneouvers [3,4]. However, in some patients regular conventional bowel management (CBM) is not effective and in these cases transanal irrigation (TI) can be useful. TI is not a new concept. Indeed, it is a very old procedure that was reinvented in the 1980s by Shandling and Gilmour [5] with the introduction of the enema continence catheter for children with NBD. Since then, different studies have demonstrated its efficacy [6–8], avoiding the need for other more invasive techniques. In those children in whom TI is not effective in controlling faecal incontinence and constipation, more invasive techniques, such as the Malone antegrade continence enema or sacral nerve stimulation, have a place [9,10].

There is limited published evidence supporting any given bowel management programme in children with spina bifida over any other [11]. Therefore, the present study evaluates whether TI using the Peristeen TI system (Coloplast A/S Kokkedal, Denmark) improves NBD symptoms and quality of life in children who had not responded satisfactorily to CBM, comparing their status before and during TI treatment.

Material and methods

Forty children with severe NBD secondary to MMC who did not respond satisfactorily to regular CBM and who presented with persistent constipation, faecal incontinence and other bowel symptoms were enrolled in this prospective study after written consent was obtained.

In all children, TI was performed using the Peristeen anal irrigation system composed of a coated rectal balloon catheter, manual pump and water container. The system makes it possible for even immobilized children or children with poor hand function to perform the irrigation procedure without assistance from their parents or caretakers. All of the components are latex-free. The catheter is inserted into the rectum and the balloon inflated to hold the catheter in place within the rectum while a tap water enema is slowly administered with the manual pump. Subsequently, the balloon is deflated and the catheter removed, followed by bowel emptying of the enema and other bowel contents. During the first 2 weeks children/parents were trained in how to use this system by specialized nurses. The volume of water used, the degree of balloon inflation and the frequency of irrigation were determined by trial and error during this period for each individual child. During the TI treatment period no patient used any drug or other alternative method for evacuation.

A standard questionnaire evaluating the efficacy of this system for NBD was hospital administered during initial and control visits. It was structured to cover: bowel function (method and frequency of defecation, frequency of diarrhoea and faecal incontinence, difficulty and/or pain during defecation, the feeling of incomplete evacuation, abdominal pain or discomfort before and/or after defecation, sweats or headache during or after defecation, time spent on intestinal evacuation, etc.) and quality of life (patient/parent opinion about daily activity and general level of satisfaction). The influence of the current bowel management on quality of life and grade of satisfaction was assessed on a numeric box scale (range 0–10, with 0 representing great reduction and 10 representing great improvement). 'Faecal continence' was defined as no involuntary stool loss in the absence of treatment, 'pseudocontinence' as no involuntary stool loss with the use of a treatment modality and 'incontinence' as involuntary stool loss. 'Occasional' faecal incontinence was defined as no more than three inadvertent escapes of faecal material during 1 month and 'frequent' as at least one episode per week. Constipation was defined as a stool frequency of less than three times weekly and/or hard, large stools that were difficult and painful to pass, and/or use of laxatives.

The statistical analysis was performed using the SPSS version 11 programme. The Wilcox test was used to analyse the ordinal variables. Statistical significance has been set at $P \leq 0.05$.

Results

Forty children were enrolled and 35 completed the questionnaire and were included in the study. The average age was 12.5 years (6–25), and there were 18 boys and 17 girls. Demographic data are summarized in Table 1.

In these children CBM consisted of manual evacuation, abdominal massage, enemas and laxatives. Fifteen children

Table 1 Baseline demographic data.

	No. of patients
Mean age in years (range)	12.5 (6–25)
Sex (male/female)	18/17
Etiology	
Myelomeningocele	28
Others	7
Bulbocavernosus reflex	
Yes	1
No	24
Not recorded	10
Anal sensitivity	
Yes	5
No	29
Not recorded	1
Mobility	
Walking	10
Impaired walking	17
Using wheelchair	8
Hand function	
No restriction	29
Unilateral impaired function	2
Bilateral impaired function	4
Method of bladder emptying	
Intermittent catheterization	31
Others	4