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PELVIC FLOOR EXERCISE: A NOVEL TREATMENT FOR CHILDHOOD ENCOPRESIS

Peter Griffiths

University of Stirling and Royal Hospital for Sick Children, Glasgow, U.K.

Lindsey Watson

Royal Hospital for Sick Children, Glasgow, U.K.

Abstract. This single case study describes the successful application of pelvic floor exercise to the treatment of childhood encopresis. A 10-year-old boy with lifelong incontinence of faeces and anal sphincter hypotonia practised daily pelvic floor contractions by interrupting his urine flow mid-stream, the rationale for the regime being strengthening of the sphincter muscle and improvement of its voluntary operation. Benefits to bowel control were immediate and complete cleanliness was achieved in 9 weeks. Being non-intrusive, the exercise procedure may be more acceptable to some patients with anal sphincter flaccidity than balloon biofeedback. The likely mechanism underlying the method is simultaneous contraction of the anorectal sphincter when the bladder sphincter is tensed.

Keywords: Children, encopresis, pelvic floor exercise, behaviour therapy.

Introduction

Encopresis is a distressing problem that affects approximately 1.5% of pre-adolescent schoolchildren (Kelly, 1996). Within the primary functional category of the disorder, a subgroup has been described in whom faecal incontinence is thought to be associated with poor tone and weak voluntary contraction of the external anal sphincter (Berg & Vernon-Jones, 1964). Biofeedback can be an effective behavioural treatment for inadvertent expulsion of faeces due to idiopathic sphincter hypotonia (MacLeod, 1983), corrected Hirschsprung's disease (Scott, 1996) and anorectal malformation (Wald & Handen, 1987), though some degree of rectal sensation appears to be a prerequisite for success (Wald, 1983) and intactness of the internal anal sphincter may also be necessary (Iwai, Iwata, Kimura, & Yanagihara, 1997). In balloon biofeedback therapy, pressure

Reprint requests and requests for extended report to Peter Griffiths, Department of Psychology, University of Stirling, Stirling FK9 4LA, Scotland, U.K. E-mail: pvg1@stir.ac.uk

changes in an anorectal balloon catheter are concurrently displayed to the patient as visual or auditory signals. The value of biofeedback lies in its ability to reveal the operation of the hidden sphincter muscle to consciousness, remission rates for biofeedback being superior to exercise alone (Whitehead & Drossman, 1996). When practised regularly, it also has the potential to strengthen the muscle and thus constitutes a form of localized physiotherapy. In our and others' experience (e.g. Thapar, Davies, Jones, & Rivett, 1992), however, not all children accept insertion of the balloon despite the suitability of the method. Some find the procedure intrinsically distasteful while others may have been sensitized by earlier investigations and therapies. We report the successful use of pelvic floor exercise as a treatment for encopresis in a case of lifelong faecal incontinence associated with anal sphincter weakness. We commend this approach as a possible alternative to biofeedback where there is intolerance of the apparatus.

Patient and procedure

Our patient is a boy aged 10 years 8 months at the start of treatment. He had never achieved satisfactory bowel control and soiled daily in underwear. His pattern was of extreme faecal urgency, accidental soiling resulting from an inability to withhold stool before reaching the toilet. He had a healthy appetite and did not suffer from either sluggish motility of the bowel or constipation. Clinical neurological examination and MRI of the spinal cord were unremarkable. Digitization and balloon manometry confirmed anal sphincter flaccidity, a weak squeeze and buttock-clenching as the boy's response to rectal pressure. There was no evidence of sexual abuse, toilet phobia or developmental delay and he was doing well at school. Urine control while awake was normal though nocturnal enuresis had been a problem until age 7. The boy was embarrassed at the prospect of regular training with the biofeedback machine. As micturition control was sufficient for him briefly to pause the flow of urine mid-stream, a programme of interruption on each urination was initiated with a view to exploring whether this routine might bring about generalized elevation of tone in the perineal musculature and specific improvement of voluntary anal sphincter contraction.

The boy and his mother were given one session of clinic instruction. The mother resonated to the idea of pelvic floor exercise as it reminded her of post-natal classes. The purpose of mid-stream urine interruption was explained in terms of how it provides powerful visible evidence of muscular activity in the pelvic floor system and a behavioural contract was established in which the boy agreed to stop the flow at least once during each natural urination. He took personal responsibility for performing the action – which he construed as "body building" – but was required to report compliance with the scheme daily to his mother. She kept a diary of soiling accidents and was enthusiastic and supportive throughout. From training onset, supervision was by weekly to fortnightly telephone calls and two clinic appointments.

Results

Outcome data were recorded as the number of days on which one or more soiling accidents occurred per week. Frequencies are shown in Figure 1. The study conformed

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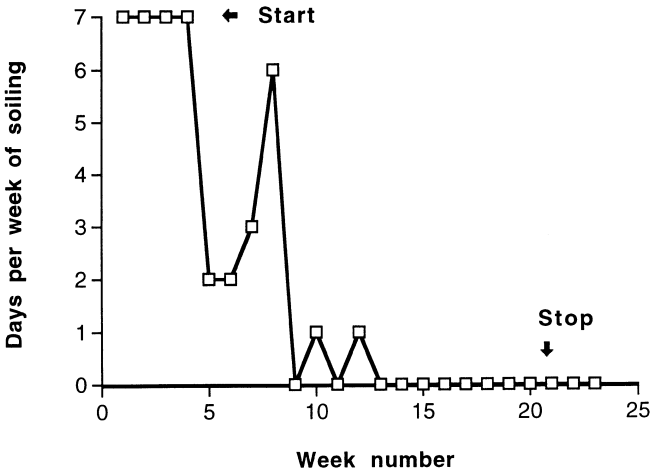

Figure 1. Treatment of encopresis by pelvic floor exercise. Mid-stream urine interruption started at end of week 4 and stopped at end of week 21. Shows days per week on which one or more soiling accidents occurred

to an AB single-case design with repeated measures. No days were free of encopretic episodes during a 4-week baseline period. Pelvic floor exercise was initiated thereafter, the boy achieving 5–10 urine interruptions per day. Positive effects were immediate with accidental soiling falling to two incidents in the first week of treatment and to zero by the ninth. Urine interruption was stopped after 17 weeks. No relapse occurred during 6 months of follow-up.

Discussion

The results approximate to a learning curve and show coincidence in time of treatment onset and decline in soiling accidents, suggesting a causative relationship. The argument for pelvic floor exercise having had a direct effect on sphincter strength and control is fortified by the suddenness of change after a decade of incontinence. A Hawthorne effect is improbable as numerous clinicians had attended the boy before. The peak in the graph at week 8 (see Figure 1) was due to lack of practice and can be regarded as a temporary relapse following unplanned treatment reversal. The boy spent a week off school with his grandmother and also took a holiday from the exercise routine, which his grandmother did not enforce. The training was reinstated by his mother on returning home.

Mother reported increased confidence in the boy as a non-targeted spin-off of the programme. Evidence for his soiling having been associated with anxiety was his almost superstitious prolongation of the exercise well beyond the point, at week 13, when bowel control had normalized. After he achieved cleanliness, she also found he never mentioned his encopretic past – a behaviour suggestive of adaptive cognitive restructuring and a post-therapy view of himself as a non-soiler.

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As the patient's gestational and birth histories were normal, indices of neuropathy or malformation of the lower bowel were absent and there was no evidence of global intellectual retardation, a functional explanation for his chronic encopresis seems likely. The developmental history contained an episode that could have led to deranged bowel control through emotional trauma when twin brothers of the patient, born prematurely, both died in their neonatal periods. This event occurred when he was 2 years old – the conventional age for initiating toilet training – and he witnessed their struggle for life in intensive care. However, against the trauma hypothesis is the fact that he did not suffer a depressive grief and bereavement reaction and the experience of loss potentiated no other psychosomatic symptoms in the elimination system, such as secondary enuresis, or indeed elsewhere. A more plausible account might be faulty learning of the correct operation of the external anal sphincter, perhaps arising from lack of effective training by his grieving parents. It is noteworthy that from the toddler stage onwards the patient had resorted to buttock-clenching as a way of resisting intra-rectal pressure and trying to prevent faecal outflow. He may have acquired this erroneous behaviour spontaneously at a time when potty training was inadequate and that consequently sphincter contraction was never developed. Thus, the laxity of the anal muscle would be explained by disuse.

The mechanism by which pelvic floor exercise during micturition affects bowel control is presumably co-contraction of the external anal sphincter when the bladder sphincter is tensed. The anatomy and physiology of the pelvic floor musculature dictate that the bowel and bladder sphincters close in unison. Nevertheless, in the case of our patient, a degree of imbalance in their operation must have been present to explain his encopresis in the context of successful continence of urine.

The criteria for admission to pelvic floor therapy for encopresis appear to be hypotonia of the external anal sphincter coupled with the ability to perform mid-stream urine interruption at least minimally. In addition, a level of motivation to practise daily and frequently for a lengthy period would seem essential. The clinical manifestation of anal sphincter weakness will most likely be a chronic inability to retain stool in the rectum sufficient to allow removal to the toilet without outflow.

Research is required to clarify which subsets of the child encopretic population might derive maximum benefit from pelvic floor therapy. Our patient suggests the primary functional group may be good candidates. It remains to be determined whether there are also some within the anorectal malformation category who might respond. The expected time-scale of therapy in relation to aetiology is quite unknown, though it is a reasonable expectation that intermittent clinic support over several weeks may be required.

To our knowledge, this is the first example of the use of pelvic floor exercise in the treatment of childhood encopresis. In children with idiopathic faecal incontinence who have inadequate anal sphincter strength to overcome urgency but who may have good bladder control, pelvic floor exercise is a non-intrusive procedure that may be more acceptable than biofeedback, either by digitization (Griffiths & Livingstone, 1997) or machine (Griffiths & Livingstone, 1998). The urine interruption method provides immediate visual information about perineal functioning to child and carer and is probably more efficacious than exercise relying on proprioceptive feedback alone.

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