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Managing irritable bowel syndrome: The impact of micro-physiotherapy

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Abstract:

Background: Irritable bowel syndrome (IBS) has a complex pathology, high prevalence and large impact on patients' quality of life. As conventional therapy may yield unsatisfactory results, a more holistic approach may be desirable. The current study assessed the effect of micro-physiotherapy on the severity of IBS symptoms.

Methods: In a double-blind study, 61 recurrent IBS patients were randomised to two sessions of micro-physiotherapy or sham micro-physiotherapy. Inclusion criteria were the presence of ≥ 1 IBS symptom from abdominal pain, constipation, diarrhoea or bloating. Exclusion criteria were previous major intestinal surgery and the presence of chronic diseases. The mean patient age was 53.5 ± 15.3 years. Micro-physiotherapy consisted of micro-palpatory examination to identify osteopathic lesions, followed by micro-massage to stimulate self-healing. The control group underwent a sham procedure. The presence and severity of symptoms was assessed at baseline and at 1-month follow-up by the same gastroenterologist.

Results: Two patients did not complete the study. There was a significant difference in percentage of patients that improved after the first session, at 74 % for the micro-physiotherapy group and 38 % for the sham group, respectively ($p=0.005$). After the second session, the initial improvement was maintained in both groups, although with no further gains, and the differences between the study groups remained significant ($p=0.007$).

Conclusions: Micro-physiotherapy significantly improves IBS symptoms and should be explored further for use in mainstream healthcare.

Keywords: integrative medicine, irritable bowel syndrome, randomised controlled trial

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Introduction

Irritable bowel syndrome (IBS) is a common and complex disorder and has a substantial impact on patients' lives. It is estimated that IBS affects up to 25 % of the population in Europe and the USA [1–3], with the prevalence higher in women and in younger individuals [4, 5]. The pattern of symptoms varies between patients, but is characterised by chronic abdominal pain or discomfort, alongside disordered bowel habits and visceral hypersensitivity [6]. IBS has a significant impact on patients' quality of life [1, 7], and, as such, is associated with considerable health-care utilization and absenteeism [8].

The pathogenesis of IBS is multifactorial and hitherto not well understood. Factors that may play a role in IBS symptomatology include infection, inflammation, diet, stress and hormonal factors [9, 10]. However, there is an increasing awareness that complex neurophysiological and psychological pathways may also be involved. It is generally accepted that there is a close connection between the enteric nervous system and the central nervous system [11], with physical or emotional stressors potentially causing disturbances at every level of the brain–gut axis [12]. Such disturbances may affect the regulation of visceral perception and the emotional response to visceral events [12]. The multifactorial nature of IBS means that a variety of different approaches are used for its management, including different pharmacological classes, psychiatric therapies, probiotics and antibiotics, dietary therapy and complementary alternative medicine (CAM) [13, 14].

IBS management by conventional medicine may lead to unsatisfactory results [15, 16]. The use of CAM has a long history in internal medicine with proven effectiveness [17] and therefore gained in popularity among both medical professionals and patients [15,18–20]. For the treatment of IBS, CAMs can be divided into four categories: reflexology, psychological interventions, biological therapies and energy-based therapies. It has been

estimated that one-third of IBS patients in the USA use CAMs [21]. Furthermore, Spanier et al. [20] demonstrated that between 11 % and 43 % of IBS patients have experienced relatively satisfactory results with CAMs. Shen et al. [19] concluded that CAMs can be recommended as part of an evidence-based approach to the management of IBS and may offer satisfactory symptom relief.

Manipulative, body-based practices such as reflexology, osteopathy and micro-physiotherapy are part of a holistic approach to IBS, which is relevant to the biopsychosocial model [22] for the etymology of IBS. To date, controlled studies reporting on the results of these methods are scarce; however, some studies have shown promising results. A randomised controlled trial by Hundscheid et al. [23] indicated that osteopathy achieved significant better symptom scores and quality of life in IBS patients than standard care, a finding replicated by both Piche et al. [24] and Florance et al. [25]. Furthermore, a systematic review by Müller et al. [26] suggested that osteopathy achieved a significant improvement in IBS symptoms vs. placebo treatment or standard care.

Micro-physiotherapy is a manual physiotherapy technique based on the principle that the human body adapts, defends and heals itself in response to traumatic, emotional, toxic, infectious or environmental insults. When an insult is greater than the abilities of a tissue to defend itself, the vitality of that tissue is altered. Micro-physiotherapy seeks such alterations via a manual micro-palpatory technique that assesses tissue vitality. Manual stimulation is then performed on affected tissues to stimulate self-healing and re-establish function. As with osteopathy, the theoretical principles of micro-physiotherapy are to be found in human embryology. Here, it is suggested that, as the muscular and visceral tissues are derived from the same embryologic structures, muscular injury is always associated with a corresponding visceral pathology, and vice versa [27, 28]. Micro-physiotherapy is a relatively novel technique, and as such, there is few data in the literature. Nevertheless, micro-physiotherapy has been shown to have positive effects on algoneurodystrophy syndrome [29], lower back pain [30] and fibromyalgia [31].

For the current investigation, we examined the effect of micro-physiotherapy on the prevalence and severity of clinical IBS symptoms.

Materials and methods

This double-blind, randomised, sham-controlled, single-centre study involved 61 patients (23 men and 38 women) with a history of recurrent IBS symptoms who were treated with conventional therapy but with unsatisfactory results. The mean patient age was 53.5 ± 15.3 years. Participants were randomly allocated to the study groups by drawing lots. The experimental group consisted of 31 patients, while the control group comprised 30 patients. The baseline characteristics of the study population are summarised in Table 1.

Table 1: Baseline characteristics of the study population.

	Total	Experimental	Control
n	61	31	30
Male	23	11	12
Female	38	20	18
Age, years (mean \pm SD)	53.5 ± 15.3	51.5 ± 14.4	55.6 ± 16.2

All values = n, unless otherwise stated. SD, standard deviation.

Inclusion criteria were the presence of one or more IBS symptoms from recurrent abdominal pain, recurrent constipation, recurrent diarrhoea or recurrent bloating. Patients were also required to have no organic lesions, as verified by a barium enema with radiological examination and/or total colonoscopy, alongside abdominal ultrasound in cases of isolated abdominal pain. Exclusion criteria were mild gastric bloating, previous major intestinal surgery, such as colectomy or hemicolectomy, and chronic diseases, such as cancer.

The study was approved by the institute's Ethics Committee and an informed consent was provided by all participants.

A clinical history was taken, and a clinical examination performed, for all patients by a single gastroenterologist (PC). Patient's symptomatology and criteria for outcome evaluation are listed in Table 2. The experimental group then underwent two sessions of micro-physiotherapy. All sessions were conducted by two therapists (DG and PB) and were carried out in two phases while the patient was in supine position on the examination table. During the diagnostic phase, micro-palpatory examination was performed to identify primary and secondary osteopathic lesions. The therapist used his both hands to perform small movements of light approach and separation in different positions on the region of interest. Based on the depth of the palpation and its location on the

body, the therapist could perceive whether the vital rhythm of the underlying structures was disturbed or not. During the therapeutic phase, the therapist stimulated the lesions with micro-massage, in order to enhance the self-healing process to restore the natural energy flow [27]. Each session lasted a mean of 30 min and they were performed 1 month apart. The control group underwent two sessions of a sham micro-physiotherapy over the same time period, by the same therapist. During sham treatment, a diagnostic and therapeutic phase was imitated by a gentle massage of the abdominal area. All patients were re-examined by the same gastroenterologist 1 month after each therapy session. Symptoms observed during initial examination were re-evaluated.

Table 2: Criteria for outcome evaluation.

A. Patient-reported symptoms	Classification of outcome
1. Abdominal pain	-- Present or absent before the treatment
2. Constipation	-- Disappeared or improved after treatment = positive
3. Diarrhoea	-- Worsened, appeared or stable after treatment = negative
4. Bloating	
5. Non-intestinal digestive symptoms (nausea, slow digestion, halitosis)	
B. Clinical signs	Classification of outcome
1. Abdominal pain induced by palpation	-- Present or absent before the treatment
2. Colic	-- Disappeared or improved after treatment = positive
3. Caecal gurgling	-- Worsened, appeared or stable after treatment = negative
4. Abdominal distension, tympanism	
5. The presence of secretion in the rectum at rectal touch	

An improvement was defined as the disappearance of IBS or a decrease in severity, while a negative result was defined as a stable or worsening symptom. Differences in outcome between experimental and control groups were tested using Pearson's χ^2 -test. A significant difference was defined as $p < 0.05$.

Results

Of the 61 patients enrolled, one from the control group left the study before the first evaluation due to being diagnosed with cancer. A second patient from the control group moved away before the second evaluation.

A significant difference in improvement ($p=0.005$) was found between the two groups following the first session. In the experimental group, 74% of the patients improved after one session of micro-physiotherapy, compared with 38% of patients in the control group. After the second session, the initial improvement was maintained in both groups, with no further gains, and the differences between the study groups remained significant ($p=0.007$). No patients experienced a worsening in clinical symptoms (Table 3).

Table 3: Results.

	Experimental	Control	p
After first treatment session			
Improved ("positive") outcome	23 (74.2)	11 (37.9)	0.005
No ("negative") effect	8 (25.8)	18 (62.1)	
Total	31 (100)	29 (100)	
After second treatment session			
Improved ("positive") outcome	23 (74.2)	11 (39.3)	0.007
No ("negative") effect	8 (25.8)	17 (60.7)	
Total	31 (100)	28 (100)	

All values = n (%).

Discussion

In this study, we demonstrated that a micro-physiotherapy technique improved symptoms in patients with IBS. Very little research on manual therapy techniques for IBS management has hitherto been published, and we believe that this is the first randomised, double-blinded study on the use of micro-physiotherapy for the management of IBS.

A few published studies have shown a beneficial effect with osteopathy compared to sham therapy or normal care [23–26]. The benefits of manual techniques in IBS may be explained by their effect of soft tissue massage on the autonomic nervous system. Henley et al. [32] showed a clear effect of osteopathic treatment on sympathetic tone, as demonstrated by changes in heart rate variability. Similarly, Pinto Pereira et al. [31] showed a significant effect of micro-physiotherapy vs. placebo on sympathetic activity in patients with fibromyalgia.

The pathogenesis of IBS is multifactorial and not yet fully explained, despite the publication of numerous studies. Nevertheless, recent research has identified visceral hypersensitivity related to autonomic nervous system, defined as altered sympathetic activity, as one of the underlying mechanisms in the pathogenesis of IBS [33].

The beneficial effect of manual therapy techniques may also be explained by the theory of a common fundamental connection between IBS and embryology [28]. The mesoderm is one of the three germinal layers that appear in the third week of embryonic development. The lateral mesoderm consists of an external layer, the somatopleure, which develops into the peripheral muscular system. The deep structure, or splanchnopleure, develops into the smooth muscle tissue in the organs; i. e., the blood vessels, colon, lungs, heart, etc. As the peripheral and organic muscular systems originate from the same embryologic structures, it is suggested that there is a possible interrelationship during pathological states. During micro-physiotherapy, the therapist looks for a disequilibrium between these tissues, which manifests itself as changes in the vitality of body tissues. By stimulating the affected tissue, the balance is restored and recovery is induced. Micro-physiotherapy fundamentally differs from osteopathy on this point. Although both are manual therapies that intend to improve or restore vital functions, the osteopathic therapist aims to restore vital functions by release of tension or blockages, whereas in micro-physiotherapy the therapist aims treating the deeper causes of the symptoms.

Besides altered autonomic neural regulation, psychosocial factors are strongly related to intestinal function and IBS pathogenesis [34]. Psycho-neuro-endocrine-immune modulation through the brain–gut axis is considered to play a key role in the pathogenesis of IBS [35–38]. Dysregulated bidirectional communication between the intestine, with its enteric nervous system, and the brain may be an important factor in the development of IBS [12, 35–37, 39, 40]. Therefore, a biopsychosocial pathophysiological model [22] may be considered in the management of IBS. IBS development is thus explained as a complex, multifactorial interaction between biological and psychosocial interactions.

This holistic concept of IBS pathogenesis fits with the holistic approach inherent in manual techniques such as micro-physiotherapy. Owing to the potentially limited impact of traditional pharmacological treatment in IBS compared to placebo and the difficulties in managing this complex disease [16, 19, 20, 41, 42], there is growing interest from both medical professionals and patients in alternative therapies.

While our results and those of previous studies have indicated that manual techniques are promising for the management of IBS [23]–[26], the underlying mechanisms have yet to be fully elucidated. Multicentre randomised controlled trials with longer follow-up time are therefore required to better evaluate such techniques and to examine their cost-effectiveness [18, 43].

Due to the strong role played by psychological factors in IBS, it is important to analyse the placebo effect [44]. In this double-blinded study, a significant difference between the experimental and control groups was found. Clearly, the positive results in the experimental group are a combination of the treatment and a placebo effect. It is well known that non-specific effects can produce statistically and clinically significant outcome in the treatment of IBS [44, 45]. However, placebo effects tend to disappear over time [46]. Although the positive effect of micro-physiotherapy in our study persisted after a time interval of 2 months, longer follow-up periods are required to account for the placebo effect [46].

In conclusion, micro-physiotherapy has a significant effect on IBS symptoms. Manual techniques should therefore be considered for regular care and to make them accessible for a larger population, although larger, multicentre trials will be required to confirm their effect.

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