Mensendieck somatocognitive therapy as treatment approach to chronic pelvic pain: Results of a randomized controlled intervention study

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Chronic pelvic pain
Mensendieck somatocognitive therapy
Motor function
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Objective: The etiology of chronic pelvic pain is disputed and multifactorial. We studied the effect of Mensendieck somatocognitive therapy aimed at reducing physical pain by changing posture, movement and respiration patterns combined with standard gynecological treatment.

Study design: Women with chronic pelvic pain unexplained by pelvic pathology were randomized into 2 groups: (1) standard gynecological treatment and (2) gynecological treatment plus somatocognitive therapy. A Mensendieck test of motor function (posture, movement, gait, sitting posture, respiration) and a visual analogue score of pain were obtained before and after the 90-day treatment period.

Results: The test results of patients treated by standard gynecological measures were unchanged (nonsignificant). By contrast, the patients receiving somatocognitive therapy in addition improved scores by 25% to 60% for all motor functions (P < .01, largest improvement for respiration, up from average 2.98 [SEM 0.30] to 4.72 [0.37]), and pain scores reduced by 50% (down from 5.60 [0.40] to 2.89 [0.40], P < .01).

Conclusion: Mensendieck somatocognitive therapy combined with standard gynecological care improved pain experience and motor functions of women with chronic pelvic pain better than gynecological treatment alone.

Chronic pelvic pain (CPP, or chronic low abdominal pain) is a common source of infirmity among women in the western world.1,2 The term is used for pains persisting in the lower abdomen and minor pelvis of women for a period exceeding 6 months. The exact prevalence of chronic pelvic pain in the female population is not known, but 2% to 3% has been suggested. Up to 15% of women consulting primary care physicians or 40% of those consulting gynecologists1-4 complain of chronic pain in the lower abdomen, fertile women more often reporting this type of pain than menopausal women. The resulting costs for health...
service is considerable, amounting to 880 million U.S. dollars per year in the United States alone.  

Our understanding of the medical factors that contribute to chronic pain of the pelvis is incomplete. When treatable biological causes are not found or when patients do not respond favorably to treatment of these processes, alternative models of understanding may be taken into consideration. Brain processes are sensitive to psychological influence, and studies suggest that women with chronic pelvic pain often have suffered multiple physical and psychological traumas and report psychiatric problems. Thus, it is necessary to examine the histories of these patients carefully. In such cases patients may be considered to suffer from a kind of persisting somatoform pain disorder (International Classification of Disease, 10th revision F45.4).  

In cases in which treatment of underlying causes does not give sufficient results or such causes are not found, treatment of the pain or factors that contribute to pain experience may be of value. However, few studies have looked at the efficacy of combined approaches in women with medically unexplained chronic pelvic pain, but some studies suggest a synergy of physical and psychological treatment.  

In agreement with previous studies, it has been our experience that patients with chronic pain states seem to have failing awareness of their own body (ie, a form of dissociation). This has led us to the suggestion that treatment modalities aimed at improving body awareness may be useful when working with women with chronic pelvic pain. Mensendieck somatocognitive therapy utilizes a cognitive approach to lead the patient to an integrated understanding and experience of own body (see Material and methods).  

We have shown previously that a standardized Mensendieck test discriminates between women with chronic pelvic pain and healthy control women when posture, simple movements, gait, and respiration are examined. The purpose of this study was to examine whether Mensendieck somatocognitive therapy has a beneficial effect on motor behavior and experienced pain in women with chronic pelvic pain and healthy control women when posture, simple movements, gait, and respiration are examined.  

Material and methods

Institutional ethics approval and informed consent

Before the patients were recruited into the study, they were asked to sign a written statement of informed consent. Hereby they agreed to participate in the study, including the randomization process. They also agreed to comply with the treatment protocol, in abstaining from other treatment (such as other medical procedures, physical therapy, acupuncture, or alternative medicine) during the 90-day treatment period. They were informed about their right to withdraw from the study at any time they should desire. Prior to undertaking this study, the research protocol was submitted to the committee of clinical ethics at the National Hospital (Rikshospitalet) for approval.

Inclusion and exclusion criteria, general examinations, and study design

Forty consecutive patients, women between the ages of 20 and 50 years with deep pelvic pain lasting between 1 and 10 years, referred to the gynecologic outpatient department of a tertiary care university hospital (Rikshospitalet, The National Hospital, Oslo, Norway), were selected into 2 treatment groups in a parallel group study, in the order of referral, and later randomized (vide infra).

A full medical record including a thorough history of pain and all previous treatments was obtained. A clinical gynecological examination including a vaginal ultrasound and palpation of pelvic muscles was performed. Patients were excluded from the study if there were evidences of somatic diseases such as multiple sclerosis, stenosis of the lumbar spinal canal, or traumatic damage of the spinal cord/cone/spinal roots or nerves, lumbar disk herniation, pelvic instability, cancer, Morbus Crohn, ulcerating colitis, trapped ovary syndrome, or pain localized to the vulvae only.

The patient was then examined by a clinical psychologist who performed a standard psychological interview and examination, including psychometric evaluation. The psychiatric exclusion criteria were the following: serious personality disorder, lifetime psychosis, bipolar disorder, organic brain disease, major depression, drug or alcohol dependency, and serious anorexia or bulimia. Finally, the patients were examined by a Mensendieck physical therapist with a full standard clinical examination, including Lasegue’s test to exclude lumbar nerve root affection, and pelvic examination to exclude pelvic instability. Having fulfilled the previously mentioned criteria, the patients were recruited to the study, and the standardized Mensendieck test performed and recorded on video tapes (v.i.). The patients were randomized into the 2 treatment groups: (1) standard gynecological treatment (STGT) and (2) STGT + Mensendieck somatocognitive therapy (MSCT). The randomization occurred by drawing a folded piece of paper with the patient’s name from a jar, thus allocating the name to a previously chosen treatment group. The randomization was performed by a person external to the study. The treatment period was 3 months (90 days).

Group 1 received standard gynecological advice at inclusion and 1 more time during the treatment period. This included hormonal treatment with continuous contraceptive pill; progestagens; or gonadotropin-releasing
hormone analogs if the pain was of cyclic type, endometriosis was found, or the patient had a history of painful functional cysts. Adequate analgetics for dysmenorrhea was provided with nonsteroidal antiinflammatory drugs if tolerated or with acetaminophen or a combination of these. The gynecologists and the patient reviewed the patient history with the aim of reducing anxiety and misunderstandings concerning diagnoses and treatments received earlier. Dietary advice and general information was given to women with irritable bowel syndrome. Sexological advice was given to avoid painful sexual practice.

Group 2 received 10 treatments sessions with the Mensendieck therapist of 1 hour’s duration over 90 days (in addition to the gynecological interventions). At the time that the patients were randomized into the treatment groups, a visual analogue score of pain (VAS) was obtained (v.i.).

After the treatment period was completed, a new gynecological, psychological/psychometric, and Mensendieck examination was conducted, including a second video recording of the patients performing the standardized test. A second VAS was also obtained.

Specific examinations and treatment

The Standardized Mensendieck Test has been described earlier. In a pilot study, it was found to be a reliable assessment tool in the hands of experienced Mensendieck therapists. The patients were asked to perform a standardized exercise program, during which they were videotaped. The recordings were all evaluated by 1 skilled Mensendieck physical therapist (ie, a different person from the one executing therapy and thus blinded) so that the evaluator did not know whether the person on the video was in the STGT group or the STGT + MSCT. Performance scores were given for posture, gait, movement, sitting posture, and respiration on a scale from 0 to 7, 7 representing optimal function and 0 denoting the gravest deviation from this optimum. Each main score had a set of several subscores. Intraclass Correlation was found to be in the range between 0.83 and 0.97.

Mensendieck therapy is aimed at obtaining the following: (1) body awareness, (2) balanced posture and controlled movement, (3) awareness of tension and relaxation, and (4) a functional respiration. The exercise programs are developed from principles of functional anatomy, and the aim is always to control and train specific muscle groups in defined movement patterns. The Mensendieck physiotherapists teach the patient how movements are initiated mentally and transferred into body motion and how thoughts, emotions, posture, and movements are integrated and interwoven. Thus, this treatment is aimed at leading the patient to enhanced body awareness through an active use of new cognitive patterns and using this new awareness in the activities of daily life. This approach is combined with manual release of tender and tense muscles (called sykegrep).

The gynecological treatment procedure used in this study was the standard treatment given to these patients at the Department of Gynecology and was limited to emotional support and general medical advice aimed at reducing concurrent gynecological symptoms reported by the patients (bleeding disorders, premenstrual syndrome, recurrent cysts, and vaginal infections). The patients were informed about the benign nature of their condition and the connection between recurrent painful experience and chronic pain. They were advised with regard to sitting posture, abdominal respiration, and relaxation. Furthermore, they were advised with regard to use of analgetics and nonsteroidal antiinflammatory drugs, sexual activity, and use of lubricants, and they were advised in gentle exercise, such as swimming in a heated pool, horseback riding, etc. The patients were seen at the time of recruitment, midway in the 90-day period, and at the time of final assessment after the treatment period.

The VAS score was obtained at the time of randomization into treatment groups by instructing the patients by means of a written statement about the purpose and procedure for pain self evaluation. They were asked to assess, each day during the first week of the study, before the treatment started, their subjective experience of pain on a scale from 0 to 10 and mark the score on a straight line, 0 to the left and 10 to the right, with 0 denoting no pain and 10 a maximum of pain experience. The average of the daily scores for this week was taken as baseline value. After the 90-day treatment period, the same procedure was repeated and the average value taken to indicate posttreatment level.

Statistical methods

Based on preliminary results from a pilot study, we decided to use an α = 0.05 and β = 0.20. The required statistical power for detecting differences between the 2 groups was set at 0.80. From Altman’s nomogram it was estimated that a sample size of 20 women in each group would provide clinically meaningful differences. The Mensendieck test has been evaluated for interrater reliability in an earlier study and found to be highly reliable (ICC \(1_1\) ≈ 0.9). Average and SEM were calculated for the scores of the patients in the 2 treatment groups (STGT and STGT + MSCT), both for the video test rating and the VAS scores. Statistical significance of the difference between scores obtained before and after treatment was calculated by means of the Student \(t\) test.

Results

Sociodemographic and clinical characteristics

In the STGT group, the age of the recruited women averaged 34.3 years (SEM 1.97). Each woman had an
average of 1.0 child (0.21). Six of the women (32%) were living alone. Occupational status was 9 women working, 8 on sick leave or rehabilitation, and 3 disabled. Eight women had elementary school, 5 high school, and 7 college or university education. Average pain duration was 6.7 years (0.76). Depression score (MADRS) was 9.0 (1.43). Seventeen (85%) had dyspareunia, 4 (20%) premenstrual dysphoria, 3 (25%) irritable bowel syndrome, and 4 (20%) muscle and joint pains (Tables I and II).

In the STGT + MSCT group, the age of the recruited women averaged 32.3 years (SEM 1.43). Each woman had an average of 1.2 children (0.20). None of the women (0%) were living alone. Occupational status was 11 women working, 6 on sick leave or rehabilitation, and 3 disabled. Eight women had elementary school, 5 high school, and 7 college or university education. Average pain duration was 6.7 years (0.76). Depression score (MADRS) was 9.0 (1.43). Seventeen (85%) had dyspareunia, 4 (20%) premenstrual dysphoria, 5 (25%) irritable bowel syndrome, and 3 (15%) muscle and joint pains (Tables I and II).

**Effect of the 2 treatment strategies on posture and movement patterns**

When the patients were evaluated after 90 days of treatment, the patients in the group receiving standard gynecological treatment had no significant change in performance, the scores being (average ± SEM) 4.15 ± 0.14 for posture (±0.2%), 3.52 ± 0.20 (–4.6%) for movement, 3.45 ± 0.22 (–1.7%) for gait, 3.74 ± 0.21 (+1.4%) for sitting posture, and 3.35 ± 0.22 (–5.1%) for respiration after 3 months (Figure and Appendix).

By contrast, the patients receiving Mensendieck somatocognitive therapy scored significantly higher after 90 days of treatment in all aspects of the Mensendieck test, the scores being 4.37 ± 0.38 (+19.3%) for posture, 4.13 ± 0.38 (+26.1%) for movement, 4.13 ± 0.39 (+24.8%) for gait, 4.67 ± 0.36 (+27.9%) for sitting posture, and a considerable increase to 4.72 ± 0.37 (+58.4%) in the scores for respiration (Figure and Appendix).

The changes in the respective subscales are found in the Appendix. The largest change after treatment was...
seen in the respiratory response to the lifting and lowering of the pelvis from the supine position (see the test manual in Ref. 13), the score for this function increasing from 2.95 ± 0.31 to 4.79 ± 0.39. There were also large improvements in the subscales for rotation in gait, frontal arm lift in movement, and support and pelvic position in sitting posture.

Pain scores on the VAS

The patients’ subjective experience of pain was assessed by means of a VAS pain scale (see Material and methods). Before treatment, the patients were randomized into the group receiving standard gynecological treatment scored an average of 6.68 ± 0.29 (average ± SE). After the treatment period of 90 days, the average VAS was 6.16 ± 0.50, a reduction of 7.8% (nonsignificant).

The patients in the Mensendieck treatment group scored an average of 5.60 ± 0.40 at baseline. After the 90-day treatment program, the average score was 2.89 ± 0.40, down by 48.4% (see Table III).

Comment

Effect of Mensendieck somatocognitive therapy on the motor function of women with CPP: Main findings

After 90 days of treatment, the patients in the Mensendieck therapy group had significantly improved scores in all subtests. The patients receiving gynecological advice for the most part did not show any significant changes of scores (Figure). The best treatment response in the STGT + MSCT group was found in the case of scores for respiration. Whereas the patients in the STGT group showed a slight, nonsignificant deterioration of their symptom scores after 3 months, the patients in the STGT + MSCT group had improved almost 2 full points. The end-of-study score almost leveled with the scores of a population of healthy control women. Thus, from a point of view of average motor functions, almost total remission of symptoms occurred after 3 months of Mensendieck treatment.

Relation to other physiotherapy studies

It is noteworthy that the subtests for the pattern of respiration are the ones in which patients improve most during Mensendieck treatment. CPP patients typically display a high costal respiration, with almost no movement in the mid- and lower abdomen. The results of the present study are in line with the findings of Mattson, who also demonstrates improvement in the quality of breathing patterns when women with CPP were treated with physical therapy. In Mensendieck somatocognitive therapy, there is always a focus on a functional
pain and symptoms in patients treated with Mensendieck but nonsignificant, reduction in VAS scores. Standard gynecological supervision, there was a slight, scores (Table I). However, for the patients receiving therapy group with an average of almost 50% in VAS experienced pain for the patients in the Mensendieck The 12-week intervention program changed the level of experienced pain and the ability to relax as well as other aspects of motor function. In Mattson’s study the patients with CPP also improved in movement functions after being treated with physiotherapy based on a framework of body awareness. Pain associated with mechanical pelvic floor dysfunction can be treated by physical therapists using various techniques and modalities. Research suggests that conservative management may be effective in treating many conditions associated with pelvic floor dysfunction.

Some notes on the selection of patients

In our study, patients were recruited as they were referred to a national medical facility. Patients seen in primary care or a gynecological practice may be conceived to differ from the present population in a number of ways. In our material, the women of the 2 treatment groups are similar with regard to average age, number of labors, average pain duration, depression scores and the frequency of dyspareunia, irritable bowel syndrome, and muscle and joint pains, whereas there were slight differences with regard to educational level, occupational status, and the frequency of premenstrual dysphoria. These differences between the groups are probably within the range that could be expected in two randomly selected groups of 20 patients.

Effect of therapy on experienced pain

The 12-week intervention program changed the level of experienced pain for the patients in the Mensendieck therapy group with an average of almost 50% in VAS scores (Table I). However, for the patients receiving standard gynecological supervision, there was a slight, but nonsignificant, reduction in VAS scores.

The findings with regard to the subjective experience of pain and symptoms in patients treated with Mensendieck somatocognitive therapy is concords with those of Mattson, who also reported some improvement with regard to subjective pain and working capacity in the patients she treated.

With regard to possible mechanisms involved in the pain reduction, we speculate that in addition to improved lymphatic drainage, as described previously, changes in gait (especially pelvic rotation, improved extension in the hip joint during the propulsion phase, and improved use of the gluteal muscles) and improved stance and sitting posture, with a more relaxed pattern, may be involved. It is our opinion that these changes in motor function are secondary to changes in cognitive patterns, as described in the Material and methods section.

We have described earlier the importance of the ideomotor preparation for the movements proper, as well as the importance of improved body awareness, brought about by Mensendieck training by focusing on the mental ideation of movements and by increasing the patient’s consciousness on proprioceptive and exteroceptive sensory input. Likewise, changes in central sensitization and defects in pain inhibition are mechanisms to be considered, with regards both to the development of pain and treatment effects. Such mechanisms are probably central in the development of myofacial pain syndromes. In addition, mechanisms like lateral inhibition brought about by alternative stimuli (touching, manual release of muscles) that changes the focus from pain to other body sensation, and a focus on coping rather than regressive behavior, may be important factors. Finally, the emotional support resulting from the weekly contact with the therapist should not be underestimated.

Strength and limitations of the study

Our study demonstrates for the first time, by means of a rigorous design, the effect of Mensendieck somatocognitive therapy on the symptom load of patients with CPP. We find this promising for further efforts to devise efficient treatment protocols for this large, haunted group of patients. The findings are strengthened by the use of independent assessors blinded to the treatment study of the patients.

However, the follow-up period was very short, and we cannot infer any long-term effects on the patients’ situation. Given the large numbers of CPP patients in Western societies, one should strive to reach simple treatment protocols applicable in general practice. The hospital at which our study was undertaken is a tertiary referral medical institution, and the results are for time being not applicable for primary health care.

Future

We are currently evaluating a long-term follow-up study of patients with CPP to be able to judge any long-term effects of the treatment. We would also like to study the effect of cognitive psychotherapy on these patients as...
well as the effect of cognitive psychotherapy in combination with Mensendieck somatocognitive therapy, especially because there are similar basic elements in these 2 forms of therapy.

References

### Appendix

#### Average scores for motor functions of patients in the 2 treatment groups at baseline and after 90 days of treatment

<table>
<thead>
<tr>
<th></th>
<th>STGT</th>
<th>STGT + MSCT</th>
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<tbody>
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<td></td>
<td>Baseline</td>
<td>90 d</td>
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<tr>
<td></td>
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<td>4.26 (0.21)</td>
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<td>3.80 (0.33)</td>
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<td>4.53 (0.17)</td>
<td>.028</td>
<td>3.50 (0.33)</td>
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<td>4.53 (0.17)</td>
<td>.028</td>
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<td>Average</td>
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<td>4.15 (0.14)</td>
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<tr>
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<td>2.98 (0.30)</td>
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Forty women with chronic pelvic pain were randomized into 2 treatment groups, receiving STGT and STGT + MSCT. Motor function was blindly evaluated at baseline and after 90 days of treatment by means of a standardized Mensendieck test, in which a score of 7 denoted optimal function and 0 maximum deviation from the optimal pattern. The table shows the average scores ± SEM for the different subtest, and the probability value for the comparison of baseline with posttreatment scores (significantly worse for 4 of the subtests for standard treatment).