Role of Repeated Prostatic Massage in Chronic Prostatitis: A Systematic Review of the Literature

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Prostatitis is a significant health problem, with a prevalence of 11%-16%. This results in more than 2 million office visits per year in the United States and each Canadian urologist seeing an average of 262 prostatitis patients every year. Up to 50% of men may be affected by it at some stage in their life, and for individual patients, the negative impact on quality of life is comparable to that of active Crohn’s disease or a recent myocardial infarction.

Chronic prostatitis/chronic pelvic pain syndrome is a clinical syndrome characterized by pain in the perineum, pelvis, suprapubic area, or the external genitalia, with a variable degree of voiding or ejaculatory disturbance. Drach et al. were the first to use a systematic approach to the diagnosis and management of patients with symptoms of prostatitis, based on the microscopic examination and cultures of segmented urogenital tract specimens. Major breakthroughs in the study of prostatitis were made in the 1990s, resulting in the currently used classification that includes acute bacterial prostatitis (type I), chronic bacterial prostatitis (type II), chronic prostatitis/chronic pelvic pain syndrome (type III), and asymptomatic inflammatory prostatitis (type IV). Type III is further subdivided into type IIIA (inflammatory) and type IIIB (noninflammatory). A validated outcome measure has been developed in the form of the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI). This is an internationally accepted tool, used in standard clinical practice, which has been recommended as the “gold standard” outcome measure for future research.

A myriad of etiopathologic mechanisms for chronic prostatitis—some not even involving the prostate gland—have been postulated, ranging from infections, dysfunctional voiding, intraductal reflux, and chemical inflammation to autoimmunity and neuromuscular disturbances. The response to the often empiric conventional multipronged treatment strategy is uncertain, resulting in frustration for patients and urologists alike. Despite a lack of unequivocal evidence, there is general agreement among experts that repeated prostatic massage has a place in the management of chronic prostatitis. In a consensus exercise to define priority of treatments, prostatic massage was ranked third after antimicrobials and α-blockers.

For most of the 20th century, repeated prostatic massage was the mainstay of therapy for chronic prostatitis. After the landmark work of Meares and Stamey, prostatic massage took a back seat in favor of selective antibiotic therapy. However, there has been a resurgence of interest in the technique since the observation that antimicrobials do not always work, sometimes not even when uropathogens are present.

We conducted a systematic review of the literature to examine the evidence for the effectiveness of prostatic massage in the treatment of chronic prostatitis.

MATERIAL AND METHODS

Studies were identified through a search of MEDLINE and EMBASE. We first combined the text terms “prostatitis,” “chronic prostatitis,” “chronic bacterial prostatitis,” “chronic abacterial prostatitis,” “chronic nonbacterial prostatitis,” “chronic pelvic pain syndrome,” and “prostatodynia” using the OR operator. Next we combined the text terms “prostate” and “prostatic” using the OR operator. Third, we combined the text terms “massage,” “milking,” and “drainage” using the OR operator. The results for the three searches described above were then combined using the AND operator.

The Cochrane Library reference list of identified trials was searched for additional studies.

Finally, the MEDLINE option “Related Articles” and bibliographies of identified articles were searched to capture additional literature.

The original intention was to include studies if (1) they were randomized, controlled trials (RCTs), (2) they involved men with chronic prostatitis, (3) control groups received a placebo/sham procedure, and (4) outcomes were measured using the NIH-CPSI. We found only one poorly conducted RCT that met these criteria. Subsequently we relaxed our criteria to include any studies that addressed the effectiveness of prostatic massage, comparative or noncomparative, and regardless of the outcome tool used.
The following information was collected for each eligible study: type of study; number of subjects; category of prostatitis being treated; pre- and posttreatment symptom scores and symptoms; follow-up period; major findings of the study; and any other characteristics unique to the study.

Methodologic quality of RCTs was evaluated using the criteria of Jadad et al., which are based on the following: (1) "randomized" study description, (2) description of correct randomization procedure, (3) "double blinding" study description, (4) description of correct double blinding, and (5) dropouts and adequate description of endpoints of interest.

The studies were too heterogeneous and the reported outcomes often too subjective to perform a quantitative synthesis of results. Instead we perform a narrative account of results from each study and attempt a narrative synthesis in our discussion.

RESULTS

The search of MEDLINE and EMBASE identified 142 unique titles, which were reviewed for the inclusion criteria. Five unique studies met our inclusion criteria, of which one published in Chinese, could not be retrieved. The remaining four studies included a randomized prospective study, two case series, and an anecdotal report. The quality score of the only RCT was 2. The reasons for the low score were inadequate description of randomization and blinding.

The main findings of the included studies are summarized in Table 1.

In an RCT, Ateya et al. divided 81 previously treated patients with either type II (n = 37) or type IIIa (n = 44) prostatitis into subgroups receiving either a combination of antibiotics and trice-weekly prostatic massage for 1 month (n = 42) or antibiotics alone for the same period (n = 39). Overall, there was a statistically significant reduction in the NIH-CPSI total and domain scores after treatment. However, there was no difference in the posttreatment scores of patients who did or did not receive repeated prostatic massage. The pre- and posttreatment scores for individual subgroups have not been reported. Similarly, the proportion of patients from each subgroup showing complete, partial, transient, or no response has also not been reported.

In a prospective, questionnaire-based case series of 26 patients with long-standing symptoms of chronic prostatitis refractory to standard therapy, Nickel et al. showed a statistically significant, marked, and sustained improvement in symptom severity and possible improvement in symptom frequency and quality of life, but no change in urinary symptoms or sexual function after treatment with a combination of culture-directed and/or empiric antimicrobial therapy and thrice-weekly prostatic massage for 6-12 weeks. Twenty percent to 25% of patients reported subjective global improvement at 2 years' follow-up. The generalizability of these findings is suspect because the study population was a select group of highly motivated individuals who traveled from North America to the Philippines for treatment at their own cost.

Through another case series involving 73 previously treated men with long-standing symptoms of chronic prostatitis, Shoskes and Zeitlin evaluated the efficacy of culture-based or empiric antibiotic therapy in combination with prostatic massage performed one to three times weekly for a median of 3 weeks (range, 2-12 weeks). Without using any validated tool for outcome measurement, they showed complete, partial, transient, and no resolution of symptoms in 40%, 21%, 19%, and 21% of patients, respectively, after a minimum follow-up of 4 months. It is not clear from this study whether the complete or partial response was sustained because the mean or median follow-up has not been reported. In the absence of objective pre- and posttreatment symptom scores, no estimate of the treatment effect is possible.

In an anecdotal report by Nickel et al. approximately one third of the 15 patients with chronic prostatitis benefited temporarily from a 6-week regimen of biweekly prostatic massage and broad-spectrum antibiotic therapy. Those who benefited had had their symptoms for <1 year and had significant leukocytosis in the prostatic fluid.

COMMENT

The benefit from prostatic massage is believed to be derived from a combination of several factors, including expression of inspissated prostatic secretions, relief of pelvic muscle spasm, physical disruption of any protective biofilm, improved circulation, and consequently improved antibiotic penetration. Studies have shown that the symptoms of chronic prostatitis may be the result of a myofascial pain syndrome leading to abnormal pelvic muscle spasm, either as a primary disorder or secondary to local infection or inflammation. A recently published (2008) large multicenter study has shown that abdominal/pelvic tenderness is present in half of patients with chronic prostatitis, as opposed to only 7% of controls, and that the commonest sites of tenderness are the prostate and internal/external pelvic floor. This finding provides a further plausible scientific basis for the efficacy of prostatic massage in chronic prostatitis. It is a common observation that gentle repeated massage of a painful organ provides relief. This is believed to be achieved by stimulation of slow-velocity C fibers closing the gate for the fast-moving Aδ fibers in the substantia gelatinosa of the dorsal horn of the spinal cord. A final, albeit speculative, reason for some patients to benefit from prostatic massage may be that they are fixed on the anal area due to different psychosomatic conditions. Indeed, there are studies in the literature showing a higher prevalence of psychological symptoms (eg, hypochondriasis, depression, weak masculine identity, and somatization) in men with chronic prostatitis than in controls.

In this systematic review we report evidence from four studies of prostatic massage in combination with antibi-
<table>
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<tr>
<th>Study</th>
<th>Type of Study</th>
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<th>Jadad Score</th>
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<tr>
<td>Ateya et al. (2006)</td>
<td>RCT</td>
<td>21-62-year-old men with type II or IIIA prostatitis</td>
<td>University Hospital, Cairo, Egypt</td>
<td>Culture-directed or empirical antibiotics PLUS prostatic massage thrice weekly for 1 mon</td>
<td>Culture-directed or empirical antibiotics for 1 mon</td>
<td>2</td>
<td>No significant difference in the NIH-CPSI total or domain scores in the two groups</td>
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<tr>
<td>Nickel et al. (1999)</td>
<td>Case series</td>
<td>Men with mean age 45 y and symptoms of CP refractory to standard therapy</td>
<td>North American patients travelling to Manila, Philippines</td>
<td>Culture-directed and/or empirical antibiotics therapy PLUS prostatic massage thrice weekly for 6-12 wk</td>
<td>Control</td>
<td>3</td>
<td>Statistically significant improvement in symptom severity and possibly in symptom frequency and QoL, but not in urinary or sexual symptoms. Global subjective improvement in a quarter</td>
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<tr>
<td>Shoskes and Zeitlin (1999)</td>
<td>Case series</td>
<td>23-72-year-old men with type II, IIIA or IIIIB prostatitis refractory to standard therapy</td>
<td>Multicenter, North America</td>
<td>Culture-directed or empiric antibiotics PLUS prostatic massage once to thrice weekly for 2-12 wk</td>
<td>Control</td>
<td>2</td>
<td>Complete, partial, transient, and no resolution of symptoms in 40%, 21%, 19%, and 21% of patients, respectively</td>
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<tr>
<td>Nickel et al. (1999)</td>
<td>Anecdotal report</td>
<td>Men with type II, IIIA, or IIIIB prostatitis</td>
<td>North America</td>
<td>Broad-spectrum antibiotics PLUS prostatic massage twice weekly for 6 wk</td>
<td>Control</td>
<td>3</td>
<td>Temporary benefit in one third</td>
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RCT = randomized controlled trial; NIH-CPSI = National Institutes of Health-Chronic Prostatitis Symptom Index; CP = chronic prostatitis; QoL = quality of life.
otics tested in 195 patients with chronic prostatitis. The available studies do not provide high-quality evidence because none was a randomized placebo/sham-controlled trial. No two studies have used the same protocol or tool for outcome measurement. Thus, it is not possible to pool the data from individual studies together and make a summary statement on the role of prostatic massage in chronic prostatitis.

Despite prostatic massage having been practised for a long time, there is a paucity of literature on this subject. There is not a single comparative study that has evaluated prostatic massage alone as a therapy for chronic prostatitis. It can be debated whether the design of such a trial would be justified in the absence of any promising data. Arguably the only subjects who could be included, if such a study were ever conducted, would be those patients with type III prostatitis, who are left with residual symptoms after treatment with more established modalities, such as antibiotics, α-blockers, and anti-inflammatory drugs.

It is interesting to speculate on the reasons behind the paucity of literature found by our review. Despite the potential benefits of this conservative, inexpensive, safe, and noninvasive therapy, we found only one low-quality RCT in the literature. Although the design of a sham procedure to mimic prostatic massage may be extremely difficult, there are no other obvious ethical or methodologic constraints to carrying out research in this area. It should, therefore, be possible to conduct a high-quality RCT. An obvious explanation is the lack of interest shown by funding bodies and the clinical community. We recommend that public funding bodies consider prioritizing the topic as soon as possible.

In the absence of an ideal sham procedure to mimic prostatic massage, it may never be possible to eliminate the placebo effect, and thus the most robust evidence on this subject may continue to be elusive.

There are several other unresolved issues regarding prostatic massage, such as patient selection, frequency of massage, duration of therapy, monotherapy versus combination therapy, and whether it should be carried out under general anesthesia/sedation. Unfortunately, the available literature does not provide answers to any of these issues.

Of all types of prostatitis, type I is the easiest to treat with culture-directed antibiotics, and type IV does not require treatment. The reviewed studies either made no attempts to subclassify patients with chronic prostatitis21 or included very few15,19 or no20 patients with type IIIB prostatitis. It is not possible to comment with any confidence on the basis of available data whether any particular group of patients responded any better than the others, although in one study19 type II patients responded better than type III. It might have been helpful in patient selection to know the pre- and posttreatment NIH-CPSI scores from the Ateya et al. study,20 especially to determine whether any specific domain scores came down more than the others. There is almost no evidence for the effect of repetitive massage on type IIIB prostatitis. However, Hennenfent and Feliciano27 have shown that in 25 of 26 patients with fewer than 10 white blood cells (WBC) per oil immersion field in expressed prostatic secretions (EPS) on first prostatic massage (ie, type IIIB prostatitis), the WBC count rose to 10 or more per oil immersion field with repetitive massage (ie, type IIa prostatitis), suggesting that the diagnostic category can change with repetitive prostatic massage. Thus, if prostatic massage is going to be continued to be offered to patients with chronic prostatitis, it would be unwise to leave out those with type IIIB prostatitis on the presumption that it does not work in them.

The ideal frequency of prostatic massage cannot be decided from the available literature. Most urologists have anecdotally believed twice weekly to be the optimal frequency.15,21 Future research should address that issue, in addition to examining prostatic massage in patients with different categories of prostatitis separately.

Duration of treatment is another unanswered question. If the symptoms resolved completely, it becomes easy to decide when to stop treatment. Yet there is nothing in the literature to suggest when to discontinue prostatic massage if the symptoms persist. In the study by Hennenfent and Feliciano27 the WBC count in EPS initially increased and peaked after a mean of 4.6 massages before finally settling. Plateauing of WBC count in EPS may be chosen as an indication to stop, although it has yet to be proven that a fall in WBC count in EPS with repetitive prostatic massage is evidence of treatment efficacy.15 It has even been argued that prostatic massage by itself could induce inflammation and produce leukocytosis in EPS. To counter that argument, if that was the case, the WBC count, instead of settling, would continue to rise or remain raised with continued massage. Future research should focus on correlating the WBC count in EPS and the NIH-CPSI scores at each visit. Serial NIH-CPSI scores can also be used as a tool to monitor treatment response, and then complete resolution or stagnation of symptom scores can serve as an indication to stop treatment.

The application of general anesthesia/sedation to carry out prostatic massage is a matter of pure speculation because there is no evidence to suggest it has ever been used for this purpose. Yet it is not unreasonable to think physicians might stop short of a "full massage" due to the discomfort experienced by an awake patient. Thus, it is possible the whole process of aggravation and subsequent amelioration of symptom scores/WBC count in EPS may be expedited if at least the first few massages were carried out under general anesthesia/sedation.

CONCLUSIONS

In conclusion, the evidence for a role of repetitive prostatic massage as an adjunct in the management of chronic prostatitis is at most "soft." It seems that twice-
or thrice-weekly massage for 6-12 weeks used alongside antibiotics possibly provides some symptomatic relief to one quarter to one third of patients with chronic prostatitis.

At the current state of rather limited knowledge about chronic prostatitis and modest efficacy of most treatment modalities, rather than shunning prostatic massage for lack of evidence, it should perhaps continue to be used as a part of a multimodal therapy. However, there should be an open dialogue between the clinician and the patients at the outset with a view to setting realistic targets. Symptom management rather than eradication should be the goal, and patients should have an opportunity to make an informed choice. Future research should address issues relating to patient selection, frequency and duration of massage, any potential use of massage as monotherapy, and whether performing massage under general anesthesia/sedation offers any advantages.

References