Sexual Dysfunction in Men With Chronic Prostatitis/Chronic Pelvic Pain Syndrome: Improvement After Trigger Point Release and Paradoxical Relaxation Training

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Purpose: The impact of chronic pelvic pain syndrome on sexual function in men is underestimated. We quantified sexual dysfunction (ejaculatory pain, decreased libido, erectile dysfunction and ejaculatory difficulties) in men with chronic pelvic pain syndrome and assessed the effects of pelvic muscle trigger point release concomitant with paradoxical relaxation training.

Materials and Methods: We treated 146 men with a mean age of 42 years who had had refractory chronic pelvic pain syndrome for at least 1 month with trigger point release/paradoxical relaxation training to release trigger points in the pelvic floor musculature. The Pelvic Pain Symptom Survey and National Institutes of Health-Chronic Prostatitis Symptom Index were used to document the severity/frequency of pain, urinary and sexual symptoms. A global response assessment was done to record patient perceptions of overall therapeutic effects at an average 5-month followup.

Results: At baseline 133 men (92%) had sexual dysfunction, including ejaculatory pain in 56%, decreased libido in 66%, and erectile and ejaculatory dysfunction in 31%. After trigger point release/paradoxical relaxation training specific Pelvic Pain Symptom Survey sexual symptoms improved an average of 77% to 87% in responders, that is greater than 50% improvement. Overall a global response assessment of markedly or moderately improved, indicating clinical success, was reported by 70% of patients who had a significant decrease of 9 (35%) and 7 points (26%) on the National Institutes of Health-Chronic Prostatitis Symptom Index ($p < 0.001$). Pelvic Pain Symptom Survey sexual scores improved 43% with a markedly improved global response assessment ($p < 0.001$) but only 10% with moderate improvement ($p = 0.96$).

Conclusions: Sexual dysfunction is common in men with refractory chronic pelvic pain syndrome but it is unexpected in the mid fifth decade of life. Application of the trigger point release/paradoxical relaxation training protocol was associated with significant improvement in pelvic pain, urinary symptoms, libido, ejaculatory pain, and erectile and ejaculatory dysfunction.

Key Words: prostate; sexual dysfunction, physiological; myofascial pain syndromes; relaxation; pelvic pain

Urologists worldwide are challenged to treat men with CP/CPPS. Sexual dysfunction associated with this disorder represents a major complaint and produces a significant detriment in quality of life. While men report ejaculatory or post-ejaculatory pain as a component of pelvic pain or discomfort, they also describe decreased libido, erectile dysfunction and ejaculatory dysfunction, which deter sexual activity. In a prospective, longitudinal study sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases approximately half of the 486 men with CPPS reported having had ejaculatory pain or discomfort intermittently, 24% had it regularly and only 26% never experienced pain during or after climax.[1]

We have previously reported a neurobehavioral and physiotherapeutic approach to manage CPPS.[2] We believe that pelvic pain exists as a neuromuscular disorder, and abnormal smooth and striated muscular tension may cause pain, abnormal voiding and sexual dysfunction. It is probable that any number of acute and chronic stress factors working via the sympathetic endplate may be involved.[3] We describe our experience with TPR of the pelvic musculature and a method of PRT to treat men with CP/CPPS. We quantified the spectrum of sexual dysfunction in these men and evaluated the effects of this therapy on pain and associated sexual symptoms.

MATERIALS AND METHODS

Patients

Men referred to the urology clinic at Stanford University Hospital from January 1996 to May 2005 with symptoms of CP/CPPS for 3 months or longer were evaluated and considered for therapy. A total of 91 men with adequate sexual function assessment were treated with the Stanford protocol of TPR and PRT.[2] More recently 55 men were treated with a modified protocol involving an intensive treatment initiation phase.

Symptom and Response Assessments

Two instruments for assessing symptoms were used and administered before commencing treatment and at each treatment and followup visit. PPSS[2] was modified from an instrument developed at University of Washington.[4] The Appendix shows questions associated with sexual activity. PPSS qualifies the nature of each symptom in a domain and quantifies how bothersome (severity/frequency) the symp-

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tom was in the last month using a 5-point Likert scale representing not at all, a little bit, moderately, quite a bit or extremely. The second instrument was NIH-CPSI. A single question on the presence or absence of ejaculatory pain/discomfort during the last week is scored as a yes or no in the NIH-CPSI pain domain. PPSS was collected from all patients as well as NIH-CPSI after it became available in 1999.

Responses to therapy were based on a comparison of patient symptom scores at the completion of treatment and 3-month followup compared with pretreatment scores. A clinical response was defined as 25% or greater improvement (decrease) in the symptom score relative to baseline, although based on our experience we considered a response of 50% or greater as clinically meaningful. Patient determined responses to treatment were recorded with GRA as markedly improved, moderately improved, slightly improved, no change or worse.

TPR and PRT

Details of the therapeutic procedures have been previously described.[2] Briefly, with patients in the lithotomy position the urologist examined the prostate, genitalia, and external and internal pelvic muscles to identify trigger points. When palpated, trigger points produce pain at the site or pain referred to a nearby anatomical location.[5] The physiotherapist applied extended treatment with the patient in the prone and lateral positions, palpating individual muscle groups and releasing trigger points with applied pressure weekly for 4 weeks and biweekly for 8 weeks thereafter.

Concomitant with physiotherapy we trained patients in PRT to decrease and modify the habitual tendency to tighten the pelvis while under tension. Patients underwent supervised practice sessions at weekly and biweekly intervals for a total of 8 sessions of paradoxical relaxation exercises and a specific breathing technique to quiet anxiety.[3] We recommended daily home practice sessions thereafter.

For the modified protocol patients participated in a 6-day, 30-hour intensive treatment initiation phase that involved TPR and PRT. This immersion phase ensured adequate time for training in pelvic floor relaxation and hands-on self-help physical therapy instruction.

Statistical Analyses

Statistical tests were done for all evaluations using SPSS®, version 13.0. All patients were included in analysis. A comparison of responses in scores among GRA categories was analyzed with the independent sample t test method. Differences between pretreatment and posttreatment scores on total pain, urinary symptoms and sexual function on PPSS, and the total NIH-CPSI score and NIH-CPSI pain subscore were analyzed with the paired samples t test method. All p values were adjusted by the Bonferroni correction for multiple outcomes in the 3 subgroups, each with 5 scales. Statistical significance for all tests was considered at $p < 0.05$. We used the Pearson correlation coefficient to assess relationships between patient baseline total pain, and sexual score scores, age and disease duration.

RESULTS

In this series 146 men with a confirmed diagnosis of category III CPPS received TPR/PRT for at least 1 month or longer. Followup evaluations were done at an average of 5 months. Mean patient age was 42 years (range 18 to 77). Of the patients 15 (10%) were older than 60 years and had no significant comorbidities typically associated with sexual dysfunction, eg hypertension, diabetes or coronary disease. In all patients traditional therapy with antibiotics, anti-inflammatory drugs and α-blockers had failed. The mean history of the disorder was 74 months (range 3 to 447). Patients had a mean total NIH-CPSI score of 24.9 (range 7 to 39, median 25) and a NIH-CPSI pain subscore of 11.5 (range 5 to 18, median 12) before treatment.

At baseline 133 of the 145 patients (92%) with CPPS reported having 1 or more symptoms of sexual dysfunction, of whom 81 (56%) indicated that they had had pain or discomfort with ejaculation within the last month. The percent of men reporting the presence or absence of this symptom on PPSS was in good agreement with the yes or no response on the NIH-CPSI questionnaire with a concordance rate of 75%. Table 1 lists the characteristics of these men based on the presence or absence of ejaculatory pain.

TABLE 1. *Pretreatment characteristics of 145 patients*

Pretreatment	No. Pts (%)	Mean Age	Mean CPPS Duration (mos)	Mean Total PPSS Sexual Score	No. Other Sexual Dysfunction (%)	Mean PPSS Total Pain Score
			Ejaculatory pain (81) pts			
Ejaculatory pain only (age):	13 (16)	40	82	2	None	14
60 or Older	1	63	24	4	—	7
59 or Younger	12	41	47	1	—	14
Ejaculatory pain + other symptoms (age):	68 (83)	42	72	7	No sex interest in 57 (83), achieve erection in 38 (56), maintain erection in 38 (56), achieve ejaculation in 36 (53)	16
60 or Older	7	67	122	13		18
59 or Younger	61	39	62	7		16
			No ejaculatory pain (64 pts)			
No ejaculatory pain, no sexual dysfunction symptoms	12 (19)	35	48	0	None	11
No ejaculatory pain, only sexual dysfunction symptoms (age):	52 (81)	45	89	6	No sex interest in 39 (75), achieve erection in 32 (61), maintain erection in 26 (50), achieve ejaculation 28 (54)	13
60 or Older	7	67	121	6		12
59 or Younger	45	43	79	5		14

TABLE 2. *Erectile and ejaculatory dysfunction* in men with and without ejaculatory pain*

		Concurrent Erectile + Ejaculatory Dysfunction		
Pain Symptom	No. Pts.	No. Pts.	Mean Age (range)	No. Younger Than 40/41–59/60 or Older
Ejaculatory pain	68	22	43.5 (26–77)	11/7/4
No ejaculatory pain	52	21	47 (21–76)	5/13/3

* Reported on PPSS as difficulty achieving and maintaining erection, and achieving ejaculation.

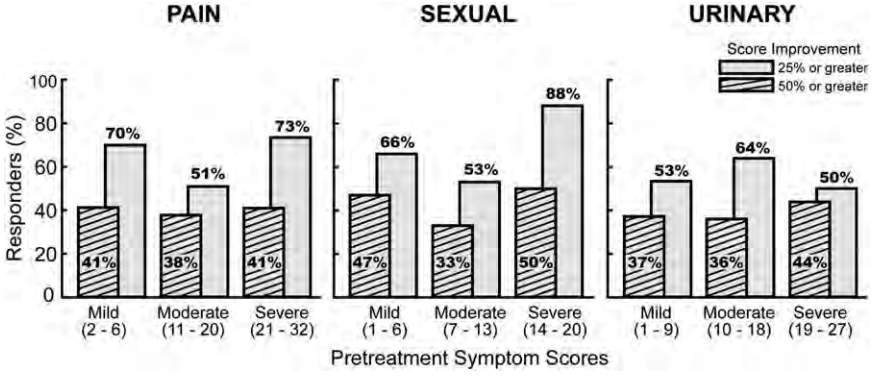
Of the patients 83% also reported other psychological and physiological aspects of sexual dysfunction, including decreased libido, erectile or ejaculatory difficulty. These symptoms occurred at similar frequency in men with ejaculatory pain and/or discomfort (68 of 81 or 84%) and in those without ejaculatory pain (52 of 64 or 82%). Lack of interest in sexual activity was the most frequent complaint (66% of patients). Greater than half of the men reported erectile and ejaculatory dysfunction, and 64% to 73% reported 2 to 4 symptoms other than ejaculatory pain. There was a significant positive correlation between increased patient age and total sexual dysfunction score (2-tailed Pearson correlation coefficient $p < 0.05$), which was attributable to the concurrence of multiple symptoms in older men. Of the 15 patients older than 60 years 14 had 1 to 4 sexual dysfunction symptoms with or without ejaculatory pain. Total PPSS pain scores excluded ejaculatory pain but they independently and concomitantly reflected other focal areas of pelvic pain. Men older than 60 years had total sexual scores that were significantly greater than those in younger men ($p = 0.014$), reflecting greater severity and the concurrence of several symptoms.

Table 2 shows the prevalence of erectile and ejaculatory dysfunction symptoms in men with and without ejaculatory pain. These symptoms (difficulty achieving and maintaining erection, and difficulty achieving ejaculation) were concurrently reported by 43 of the 133 men (31%) who reported sexual dysfunction symptoms, and predominately in those younger than 60 years with (18 of 22 or 72%) and without (18 of 21 or 86%) ejaculatory pain.

Symptom severity was categorized into mild, moderate and severe tertiles for each symptom domain at baseline. Scores in all patients who participated in the original and the modified treatment initiation protocols were combined, and pretreatment mean pain, sexual function and patient age were similar in the 2 groups. However, the mean history of pelvic pain was twice as long in those enrolled in the modified than in the earlier protocol (73 vs 31 months). Responses to TPR/PRT for all outcome assessments were similar for PPSS symptom domains, and NIH-CPSI total and pain domains (range $p = 0.27$ to 0.77, 0.67 and 0.27, respectively). The figure shows clinical improvement of 25% or greater in PPSS scores in approximately 60% of the patients in each symptom domain, averaged for the 3 severity grades. Mean symptom scores decreased by half or greater in 39% of the patients for the pain domain, in 43% for sexual dysfunction and in 38% for urinary complaints. In general patients with all gradations of symptoms responded similarly to therapy.

Table 3 lists individual sexual dysfunction symptoms. Before treatment patients reporting a specific symptom rated the symptom as an average of moderately bothersome. After completing TPR/PRT therapy 44% to 52% of the patients with responses had individual sexual symptoms that improved by 50% or greater and mean percent score decreases were 77% to 87%. Men with ejaculatory pain showed a mean score decrease of 83%. However, of the men with 3 erectile and ejaculatory dysfunction symptoms concurrently 41% had 50% or greater improvement and only 5 of 43 had 100% symptom resolution (table 2).

GRA questionnaires were completed by 103 of the 146 patients (71%). Table 4 shows the association between GRA category and improvement levels. Patient subjective assessment of the success of therapy for improving symptoms, as indicated by the 2 highest GRA categories of markedly or moderately improved, was reported by 70%. Treatment resulted in highly significant improvement in PPSS total pain and urinary scores, including 6.5-point or 44% and a 4.4-point or 28% decrease in scores for markedly and moderately improved as well as significant decreases in urinary scores for markedly and moderately improved results (all paired sample test $p < 0.001$). Sexual function scores decreased significantly by 43% in men with marked improvement but only by 10% in those with moderate improvement ($p < 0.001$ and 0.96, respectively). NIH-CPSI total scores



Improvement in pain, urinary and sexual scores after therapy, as assessed by PPSS

TABLE 3. *Sexual function scores and responses to TPR/PRT assessed by PPSS*

Symptom	No. Reporting Symptom Before Treatment (%)*	No. 50% or Greater Improvement After Treatment (%)	Mean % Score Change
No interest in sexual activity	96 (66)	42 (44)	−84
Pain with ejaculation	81 (56)	38 (47)	−83
Difficulty achieving erection	70 (48)	33 (47)	−87
Difficulty maintaining erection	64 (44)	33 (52)	−77
Difficulty achieving ejaculation	64 (44)	33 (52)	−77

* Percent of the 146 men who presented with each symptom.

decreased 9.2 (35%) and 7 points (26%) for markedly and moderately improved GRAs, respectively (each $p < 0.001$). NIH-CPSI pain domain scores showed significant decreases of 5 points after TRP/PRT for the 2 highest GRAs ($p < 0.001$). Patients with only slight improvement in GRA showed no significant changes in symptoms scores. Patients were quite accepting of the therapeutic regimen and no one withdrew from the protocol because of worsening pain.

DISCUSSION

The direct effects of CPPS on sexual function are often overlooked. The PPSS instrument was useful for identifying the incidence and severity of 3 components of sexual related function impairments, including pain/discomfort with ejaculation, psychological impairment of sexual drive and the physiological or psychogenic aspects of erectile and ejaculatory function in the last month. In our cohort sexual dysfunction was highly prevalent in CPPS with 92% of the men reporting 1 or more symptoms. Furthermore, 81% of the patients reported sexual dysfunction symptoms in the absence of ejaculatory pain. This occurrence of sexual dysfunction would be highly unexpected otherwise in men in the mid fifth decade of life. Ejaculatory pain was reported by 56% of these men with refractory CPPS. In general population studies the incidence of pain with ejaculation was rare and independent of age, that is only 1% in older men without CPPS[6] and approximately 20% in those with lower urinary tract symptoms.[7,8]

The limitations of this case study series are that no documentation of a formal sexual history outside of the symptom questionnaires was performed. It was not possible to assess patient compliance with continued home treatments of TPR and PRT. Certainly the treatment protocol was performed with no sham or placebo control group.

The positive aspects of this study are that PPSS records symptoms for a full month. Therefore, it provides a wider window of assessment and qualification of severity for each symptom than the single NIH-CPSI question, which is answered yes or no and refers to a previous week of experience. The patient population in our study represents those refractory to traditional therapies. Patients registering for the intensive, 6-day immersion protocol had a longer history of illness and they sought help through the Internet. They may have been more motivated and compliant due to the endured experience of the chronic disorder.

Decreasing male sexual function has been associated with increasing age.[9] Sexual dysfunction, particularly erectile dysfunction and loss of libido, is more frequently reported by men with pelvic pain then by men without a pain syndrome, whereas sexual and somatic complaints are age associated in asymptomatic men.[10] In community based samples minor erectile dysfunction was reported in approximately 25% of men who were 50 to 78 years old,[6] while significant dysfunction was less common in 1% to 3% of those who were 40 to 54 years old.[11] In these men the level of associated concern was low, presumably because they considered this part of the aging process. In contrast is the high prevalence of sexual dysfunction in our study, in which only 10% of the patients were older than 60 years. More than 40% of the patients reported erectile dysfunction and ejaculatory dysfunction of moderate severity.

The association between urogenital pain and impaired sexual function is not clear. The relationship between CP/CPPS and sexual dysfunction may be frequently complicated by psychological components. Men with urogenital pain experience depression and men with depression experience impaired sexual function.[12] Chronic pelvic pain may have a psychosomatic basis, in that pelvic trigger points and tension myalgia arise out of somatization or activation of the neuroimmunological axis.[13] Numerous reports implicate psychological stress as contributory to the etiology and/or exacerbation of CPPS and stress management therapy alone may provide improvement in these individuals.[14–17]

TABLE 4. *GRAs vs PPSS symptom scores, and NIH-CPSI total and pain scores after TPR/PRT*

Response Measure	Markedly (mean score)*			Moderately (mean score)			p Value	Slightly (mean score)†		
	Before Treatment	After Treatment	Decrease (%)	Before Treatment	After Treatment	Decrease (%)		Before Treatment	After Treatment	Decrease (%)
PPSS:										
No. pts		40			32				15	
Total pain domain	14.8	8.4	−6.5 (−44)	14.7	10.2	−4.4 (−28)	<0.001	13.5	11.7	−2.0 (−10)
Sexual domain	5.9	2.6	−3.3 (−43)	4.7	3.7	−1.1 (−10)	0.96	4.3	3.8	−0.5 (−27)
Urinary domain	8.7	4.9	−3.6 (−31)	10.6	6.4	−4.0 (−19)	<0.001	9.6	5.7	−3.2 (−26)
NIH-CPSI:										
No. pts		35			28				10	
Total score	24.8	15.6	−9.2 (−35)	25.6	18.9	−7.0 (−27)	<0.001	24.8	21.7	−3.0 (−12)
Pain domain	11.3	7.5	−4.7 (−32)	12.6	8.9	−5.0 (−40)	<0.001	10.5	9.2	−1.3 (−14)

All p values adjusted by Bonferroni correction for 15 comparisons.
* Paired samples t test $p < 0.001$.
† Paired samples t test $p = 1.0$.

CONCLUSIONS

The therapeutic methods in this report provide a 2-pronged approach to treatment, including the physical approach, focusing on the release of internal and external pelvic trigger points, and the psychological approach, involving relaxation training to help the patient gain control of tension. While to our knowledge the relationship between pelvic pain and disturbances in sexual function remains to be elucidated, these methods enhance symptomatic improvement in patients with refractory CPPS and associated sexual dysfunction. Future clinical trials with sham treated controls are warranted to examine this new therapeutic approach in men with CPPS.

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APPENDIX

Sexual function symptom domain on PPSS

Over the past month or so, including today, how much were you bothered by the following:

	Not at All	A Little Bit	Moderately	Quite a Bit	Extremely
Lack of interest in sexual activity	0	1	2	3	4
Difficulty getting an erection	0	1	2	3	4
Difficulty maintaining an erection	0	1	2	3	4
Difficulty reaching an ejaculation	0	1	2	3	4
Pain with ejaculation	0	1	2	3	4

Total Sexual Score_____

The maximum total sexual score is 20.

Abbreviations and Acronyms

CP/CPPS	=	chronic prostatitis/CPPS
CPPS	=	chronic pelvic pain syndrome
GRA	=	global response assessment
NIH-CPSI	=	National Institutes of Health-Chronic Prostatitis Symptom Index
PPSS	=	Pelvic Pain Symptom Survey
PRT	=	paradoxical relaxation training
TPR	=	trigger point release

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EDITORIAL COMMENT

CP is a common and often frustrating problem for urologists. With unclear pathophysiology these patients are commonly treated primarily with costly long-term antibiotics and the results are often disappointing for the patient and treating physicians. There is increasing evidence that neuropathic pain syndrome has an important role in many patients with CP/CPPS. These authors have previously reported an impressive 72% of moderately or markedly improvement in pain and urinary symptoms using TRP/PRT without antibiotics to treat patients with CP/CPPS. In this study they also report improvements in sexual function in these patients. Although their studies are not prospective or randomized, they provide further evidence that physicians treating CP/

CPPS should realize that assumed infection may not be the main problem of this condition and they strongly consider incorporating some neuromodulatory therapeutic measures in the regimen.

Although myofascial trigger point assessment and release therapy is a new approach for CP, the concept of trigger points for various diseases and symptom complexes can be traced back to ancient Chinese acupuncture literature. Acupuncture has also been reported to be effective for treating patients with CP/CPPS.[1–3] Since acupuncture treatment for CP/CPPS usually uses distant points with or without local perineal points, it likely works through different neuromodulatory mechanisms from that of myofascial TPR. CP probably involves various pathophysiology mechanisms. A combination of various effective approaches may be beneficial. Further studies of the understanding of the mechanisms and the selection of appropriate treatments in individuals are urgently needed for this difficult clinical condition.

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