

Hirudotherapy in the Treatment of Chronic Prostatitis/Chronic Pelvic Pain Syndrome: A Report of 3 Cases

Kronik Prostatit/Kronik Pelvik Ağrı Sendromu Tedavisinde Hirudoterapi: 3 Vaka Bildirisi

¹ Gülay TRAK^a, ² Abdülmüttalip ŞİMŞEK^b, ³ İbrahim TEKEOĞLU^c

^aDepartment of Microbiology, Sakarya University Training and Research Hospital, Sakarya, Türkiye

^bDepartment of Urology, İstanbul Başakşehir Çam and Sakura City Hospital, İstanbul, Türkiye

^cDepartment of Physical Medicine and Rehabilitation, Division of Rheumatology, Sakarya University Faculty of Medicine, Sakarya, Türkiye

ABSTRACT For centuries, researchers have investigated medicinal leech therapy (hirudotherapy) for the treatment of inflammatory diseases. *Hirudo medicinalis*, contain bioactive substances that relieve the host's inflammatory complaints such as inflammation, pain and swelling, and reduce humoral and cellular immune responses. In this case report, the clinical data of three patients who were being treated with the diagnosis of chronic prostatitis/chronic pelvic pain syndrome after medical leech application were discussed. In all 3 patients who stated their pain level was 9 according to the Visual Analogue Scale pain scale before hirudotherapy, 1 patient stated a reduction to 3 points and the other 2 patients each reported a score of 4. With regard to the National Institutes of Health Chronic Prostatitis Symptom Index total scores, improvements of 31%, 79%, and 62% were observed. No side effects were observed other than localized itching. Hirudotherapy may be a useful approach in chronic prostatitis/chronic pelvic pain syndromes.

Keywords: *Hirudo medicinalis*; prostatitis

ÖZET Yüzyıllar boyunca arařtırmacılar, iltihaplı hastalıkların tedavisi için tıbbi sülük tedavisini (hirudoterapi) arařtırmıřlardır. *Hirudo medicinalis*; konakçının iltihaplanma, ağrı ve şiřlik gibi iltihabi řikâyetlerini gideren, humoral ve hücresele bağıřıklık tepkilerini azaltan biyoaktif maddeler içerir. Bu olgu sunumunda, tıbbi sülük uygulaması sonrası kronik prostatit/kronik pelvik ağrı sendromu tanısı ile tedavi edilen 3 hastanın klinik verileri tartıřılmıřtır. Hirudoterapi öncesi Vizüel Analog Skala ağrı skalasına göre ağrı düzeyini 9 olarak belirten 3 hastadan 1'i 3, diđer 2 hasta ise 4 puan olarak bildirmiřtir. Ulusal Saęlık Enstitüleri Kronik Prostatit Belirti İndeksi toplam puanlarında %31, %79 ve %62'lik iyileřmeler gözlemlendi. Lokalize kařıntı dışında herhangi bir yan etki gözlemlenmedi. Hirudoterapi, kronik prostatit/kronik pelvik ağrı sendromlarında faydalı bir yaklařım olabilir.

Anahtar Kelimeler: *Hirudo medicinalis*; prostatit

The presence of chronic pelvic pain disease with characteristic urinary symptoms and sexual dysfunction for at least 3 months in the last 6 months, without bacterial infection of the urinary tract, is called chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS).¹ Its prevalence in the population is 8.2% (2.2-9.7%).² The National Institutes of Health (NIH) published the NIH Chronic Prostatitis Symptom Index (NIH-CPSI) which assesses symptoms in 3 main dimensions (pain, voiding, and quality of life)

(Table 1).^{2,3} The treatment of CP/CPPS may involve various medications, including alpha-blockers, tricyclic antidepressants, quercetin, antibiotics, pregabalin and sildenafil-if erectile dysfunction is present, as well as physiotherapy/pelvic floor relaxation therapies.⁴ Various studies on different subgroups of CP/CPPS have not provided high-level evidence on treatment modalities, largely owing to the fact that the pathophysiology of CP/CPPS is still not fully understood.^{2,4}

Correspondence: Gülay TRAK

Department of Microbiology, Sakarya University Training and Research Hospital, Sakarya, Türkiye

E-mail: drgulaytrak@gmail.com

Peer review under responsibility of Journal of Traditional Medical Complementary Therapies.

Received: 26 Jan 2022 **Received in revised form:** 13 Jun 2022 **Accepted:** 19 Jun 2022 **Available online:** 26 Jun 2022

2630-6425 / Copyright © 2023 by Türkiye Klinikleri. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



TABLE 1: National Institutes of Health Chronic Prostatitis Symptom Index.

THE UROLOGY GROUP

NIH Chronic Prostatitis Symptom Index (NIH-CPSI)

NAME: _____ **DATE:** _____ **DOB:** _____

Pain or Discomfort

1. In the last week, have you experienced any pain or discomfort in the following areas?

a. Area between rectum and testicles (perineum)	Yes	No	
	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
b. Testicles	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
c. Tip of the penis (not related to urination)	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
d. Below your waist, in your pubic or bladder area	<input type="checkbox"/> 1	<input type="checkbox"/> 0	

2. In the last week have you experienced:

a. Pain or burning during urination?	Yes	No	
	<input type="checkbox"/> 1	<input type="checkbox"/> 0	
b. Pain or discomfort during or after sexual climax (ejaculation)?	<input type="checkbox"/> 1	<input type="checkbox"/> 0	

3. How often have you had pain or discomfort in any of these areas over the last week?

0 Never
 1 Rarely
 2 Sometimes
 3 Often
 4 Usually
 5 Always

4. Which number best describes your AVERAGE pain or discomfort on the days that you had it, over the last week?

0 1 2 3 4 5 6 7 8 9 10
 NO PAIN AS BAD AS YOU CAN IMAGINE

Urination

5. How often have you had the sensation of not emptying your bladder completely after you finished urinating, over the last week

0 Not at all
 1 Less than 1 time in 5
 2 Less than half the time
 3 About half the time
 4 More than half the time
 5 Almost always

6. How often have you had to urinate again less than two hours after you finished urinating, over the last week?

0 Not at all
 1 Less than 1 time in 5
 2 Less than half the time
 3 About half the time
 4 More than half the time
 5 Almost always

Impact of Symptoms

7. How much have your symptoms kept you from doing the kind of things you would usually do, over the last week?

0 None
 1 Only a little
 2 Some
 3 A lot

8. How much did you think about your symptoms, over the last week?

0 None
 1 Only a little
 2 Some
 3 A lot

Quality of Life

9. If you were to spend the rest of your life with symptoms just the way they have been during the last week, how would you feel about that?

0 Delighted
 1 Pleased
 2 Mostly satisfied
 3 Mixed
 4 Mostly dissatisfied
 5 Unhappy
 6 Terrible

Scoring the NIH Chronic Prostatitis Symptom Index Domains

Pain: Total of items 1a, 1b, 1c, 1d, 2a, 2b, 3, and 4 = _____

Urinary Symptoms: Total of items 5 and 6 = _____

Quality of Life Impact: Total of Items 7, 8, and 9 = _____

Medicinal treatment with leeches (hirudotherapy) has been studied and tried by many researchers in various conditions, including inflammatory and rheumatological diseases, or after surgery.⁵ Leech salivary gland secretions have been shown to be associated with vasodilation, analgesia, anti-inflammation, anticoagulation, inhibition of bacterial proliferation, resolution of edema and acceleration of microcirculation. More specifically, these secretions are suggested to improve damaged vascular structures in organs and tissues, most notably by increasing permeability and immunity and by reducing hypoxia and pain (Table 2).⁶

The literature on hirudotherapy is limited and there is no study on its use in the treatment of CP/CPPS. In this study, 3 cases of chronic prostatitis treated only with medicinal leeches without any surgical intervention or use of pharmacological drugs are presented with particular focus on treatment outcome.

CASE REPORT

PATIENTS

Case 1

A 50-year-old male patient had CP/CPPS for 6 years. His pain was around the anus, testes, the tip of the penis and the back of the waist, and the degree of pain increased after urination and following ejaculation. The patient reported that his pain decreased with pharmacological drugs, but returned to its former severity after he stopped taking the drugs. He said that even though he had been adhering to treatment for the last 2 years, there was no lasting relief. In the NIH-CPSI scale, he reported pain score as 20/21, voiding dysfunction as 8/10, and quality of life as 11/12.

Case 2

A 61-year-old male patient diagnosed with CP/CPPS 17 years ago had severe pains in the anus, testes, back of the waist and groin. The patient, who was followed up by different urology clinics, reported that he felt better while using NIH-recommended drugs, but his pain increased after stopping the drugs. According to the NIH-CPSI, he had a pain score of 17/21, voiding

TABLE 2: Some potential bioactive substances in leech secretions.

Feature	Bioactive substances
Analgesic and anti-inflammatory effect	Hirustasin, Bdellins, Eglins, complement inhibitors, carboxypeptidase
Extracellular matrix disruption	Hyaluronidase, collagenase
Increased blood flow	Histamine-like substances
Platelet function inhibition	Saratin, decorsin and apyrase
Anticoagulant effect	Hirudin, destabilase, factor Xa inhibitor
Antimicrobial action	Chloromycin, destabilase, chloromycetin

dysfunction score of 1/10, and quality of life score of 11/12.

Case 3

A 53-year-old male patient who had CP/CPPS for 5 years. He had severe pain in his testes, lower back, groin and bladder. He reported using NIH-recommended pharmacological agents prescribed by various urology clinics, but without any improvement. According to the NIH-CPSI, pain was 15/21, voiding dysfunction was 6/10, and quality of life was 6/12.

All patients voluntarily applied for leech therapy while continuing clinical follow-up. Patient records were reviewed retrospectively and no contraindications for leech therapy were found (bleeding diathesis, active bleeding, severe anemia, antithrombotic drugs, allergy, pacemaker, viral hepatitis or human immunodeficiency virus positivity). After obtaining consent and careful evaluation of general characteristics, such as blood pressure, pulse and respiratory rate, we applied medium-sized medicinal leeches under sterile conditions. The patients were given 5 hirudotherapy sessions with an interval of 3 days and 6 leeches were used in each session. Three of the leeches were applied to the pelvis, 1 to the urogenital triangle zone and 2 to the right and left areas between L4-5 (Figure 1, Figure 2). Used leeches were destroyed in 70% alcohol. Demographic characteristics of the patients are shown in Table 3.

DISCUSSION

Although approximately 200 years have passed since the first description of chronic prostatitis in 1815, its cause and etiopathogenesis are still controversial and

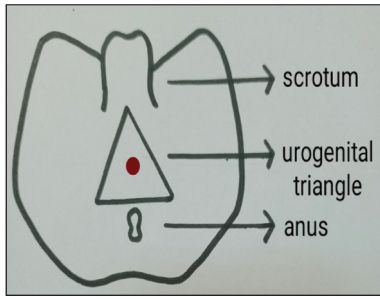


FIGURE 1: Applying leech to the urogenital triangle point.

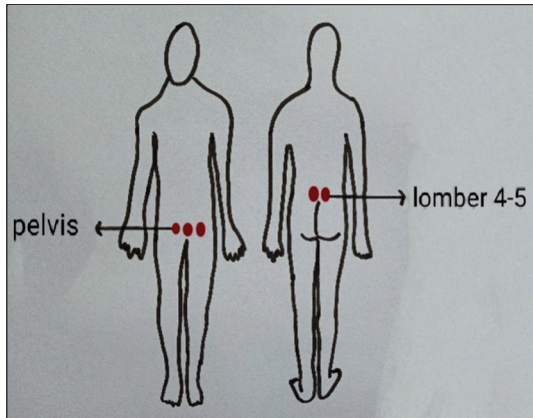


FIGURE 2: Applying leech to the pelvis and lumbar 4-5 points.

TABLE 3: Demographic characteristics of the patients.

	Case 1	Case 2	Case 3
Age	50	61	51
Weight (kg)	75	87	72
Length (cm)	175	185	173
Profession	Trade	Military veteran	Caretaker
Comorbid disease	No	Hypertension	No
Drugs used	No	Hypertension drugs	No

long-lasting treatment modalities remain elusive.⁷ In a study of chronic prostatitis treatment, researchers divided patients into 3 groups (placebo group, antibiotic+anti-inflammatory group, and antibiotic+alpha-blocker group). They determined that group 3 showed more significant improvement, indicating advantages of medical therapy.⁸ Similarly, the 3 patients we presented all report that they had adhered to and benefitted from medical treatment in the past. However, after a while, their pain returned.

Hirudotherapy has also been used successfully in acute neuritis, varicose veins, paronychia, pur-

TABLE 4: Clinical characteristics of patients.

NIH-CPSI score	Case 1		Case 2		Case 3		Case 1	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment	From treatment after 1 weeks (reduction)	From treatment after 5 weeks (reduction)
Pain	20	12	17	4	15	7	53%	6.6%
Urinary complaints	8	8	1	0	6	2	66%	16%
Life quality	11	7	11	2	6	1	83%	16%
Total	39	27	29	6	27	10	62%	11%
VAS	9	4	9	3	9	4	55%	11%

NIH-CPSI: National Institutes of Health Chronic Prostatitis Symptom Index; VAS: Visual Analogue Scale.

purea fulminans and hematomas, and chronic salpingo-oophoritis.⁹⁻¹² A prior study compared patients with salpingo-oophoritis receiving leech therapy to those treated with antibiotics+analgesics+vitamins+antihistamines+biostimulators. The article reported that 70% of the patient group receiving hirudotherapy showed a partial reduction in pain, while 25% demonstrated significant reduction; however, the patient percentages reporting the same level of decrease in the comparative group were 50% and 36.7%, respectively. These developments were also objectively confirmed by ultrasonography and gynecological tests; thus, hirudotherapy was accepted as an effective adjunctive therapy for patients with salpingo-oophoritis.⁹ The patients presented here received leech therapy when they were not taking any medication. According to the Visual Analogue Scale pain scale, all patients had described their pain to be 9 before hirudotherapy, which reduced to 3 (single patient) or 4 points after treatment. According to the pain dimension of the NIH-CPSI, scores of 20, 17, and 15, respectively, reduced to 12, 4, and 7 after treatment. Total NIH-CPSI scores showed improvements of 12 (31%) points, 23 (79%) points and 17 (62%) points, respectively. The most common side effects of hirudotherapy are reported to be mild bleeding from the application site and skin reactions (mild redness and itching).¹³ We observed itching at the bite site in all 3 patients.

Patients were re-evaluated 4 weeks after the end of treatment. In this evaluation, some deterioration

was observed in all 3 domains of the NIH-CPSI scale (pain, voiding, and quality of life) (Table 4). We predict that the symptoms can be permanently improved if the leech application continues.

In conclusion, although there are studies on the use of hirudotherapy in various diseases in the medical literature, research on urological diseases is limited. Our findings indicate that hirudotherapy may be promising for patients with chronic prostatitis. Considering that our country is rich in medicinal leech resources, we believe that physicians could benefit from learning and consciously applying this practice. More studies should be conducted in patients with inflammatory pain complaints in order to direct future treatment(s) and provide guidelines.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

REFERENCES

1. Fu W, Zhou Z, Liu S, Li Q, Yao J, Li W, et al. The effect of chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) on semen parameters in human males: a systematic review and meta-analysis. *PLoS One*. 2014;9(4):e94991. [Crossref] [PubMed] [PMC]
2. Mete Çek. Kronik prostatit/kronik pelvik ağrı sendromu: güncelleme [Chronic prostatitis/chronic pelvic pain syndrome]. *Endüroloji Bülteni*. 2016;9:72-5. [Crossref]
3. Wagenlehner FM, van Till JW, Magri V, Perletti G, Houbiers JG, Weidner W, et al. National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) symptom evaluation in multinational cohorts of patients with chronic prostatitis/chronic pelvic pain syndrome. *Eur Urol*. 2013;63(5):953-9. [Crossref] [PubMed]
4. Tuğcu V, Taşçı AI, Fazlıoğlu A, Gürbüz G, Ozbek E, Sahin S, et al. A placebo-controlled comparison of the efficiency of triple- and monotherapy in category III B chronic pelvic pain syndrome (CPPS). *Eur Urol*. 2007;51(4):1113-7; discussion 1118. [Crossref] [PubMed]
5. Lemke S, Vilcinskas A. European medicinal leeches-new roles in modern medicine. *Biomedicine*. 2020;8(5):99. [Crossref] [PubMed] [PMC]
6. Abdullah S, Dar LM, Rashid A, Tewari A. Hirudotherapy/leech therapy. applications and indications in surgery. *Arch Clin Exp Surg*. 2012;1(3):172-80. [Link]
7. Erdemir F, Fırat F, Atılğan D, Uluocak N, Parlaktaş BS, Yaşar A. Tıp 3 kronik prostatit (kronik pelvik ağrı sendromu) üzerine üç farklı tedavi protokolünün etkinliğinin karşılaştırılması [The comparison of the efficacy of three different treatment protocols on the type 3 chronic prostatitis (chronic pelvic pain syndrome)]. *J Clin Anal Med*. 2010;1(2):26-30. [Link]

8. İstanbulluođlu MO, Gürbüz R, Güven S, Pişkin MM, Kılınç M. İnflamatuar kronik pelvik ağrı sendromu tedavisinde antibiyotik+anti-inflamatuar ve antibiyotik + alfa - bloker tedavilerinin plasebo ile karşılaştırılması [Comparison of antibiotic+antiinflamatuvar and antibiotic+alfa blockertherapy effectivity comparison of inflamatuvar chronic pelvic pain syndrome treatmentsa placebo controlled study]. Selçuk Tıp Dergisi. 2008;24(4):217-26. [\[Link\]](#)
9. Gileva OS, Mumcuoglu KY. Hirudotherapy. In: Grassberger M, Sherman RA, Gileva O, Kim CMH, Mumcuoglu KY, eds. Biotherapy-History, Principles and Practice: A Practical Guide to the Diagnosis and Treatment of Disease Using Living Organisms. 1st ed. Germany: Springer, Heidelberg; 2013. p.31-76. [\[Crossref\]](#)
10. Graham CE. Thumb paronychia treated with leeches. Med J Aust. 1992;156(7):512. [\[Crossref\]](#) [\[PubMed\]](#)
11. de Chalain T, Cohen SR, Burstein FD. Successful use of leeches in the treatment of purpura fulminans. Ann Plast Surg. 1995;35(3):300-4; discussion 304-6. [\[Crossref\]](#) [\[PubMed\]](#)
12. Lee NJ, Peckitt NS. Treatment of a sublingual hematoma with medicinal leeches: report of case. J Oral Maxillofac Surg. 1996;54(1):101-3. [\[Crossref\]](#) [\[PubMed\]](#)
13. Bickel KD, Lineaweaver WC, Follansbee S, Feibel R, Jackson R, Buncke HJ. Intestinal flora of the medicinal leech *Hirudinaria manillensis*. J Reconstr Microsurg. 1994;10(2):83-5. [\[Crossref\]](#) [\[PubMed\]](#)