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REVIEW

A narrative review of acupuncture in prostate diseases: perspectives from traditional Chinese medicine, current evidence and future directions

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Abstract

Prostate diseases, including chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS), benign prostatic hyperplasia (BPH) and prostate cancer, are among the most common conditions in andrology and urology. These diseases significantly affect patients' life quality and have profound impacts on the mental and psychological health of patients. Acupuncture has been widely used to treat prostate diseases, demonstrating notable efficacy and safety. This review synthesizes traditional Chinese medicine (TCM) perspectives on prostate diseases and evaluates the clinical application of acupuncture while summarizing mechanisms and proposing future research directions. Our review included twenty clinical trials involving CP/CPPS, BPH and prostate cancer. Acupuncture demonstrates significant efficacy in symptom relief (pain reduction and improvement of urinary symptoms) and disease modification (prostate volume reduction). The most frequently targeted meridians were the bladder meridian of foot-taiyang, the spleen meridian of foot-taiyin, ren meridian, the pericardium meridian of hand-jueyin, the liver meridian of foot-jueyin, the heart meridian of hand-shaoyin, the gallbladder meridian of foot-shaoyang and the kidney meridian of foot-shaoyin. In addition, acupuncture treatment for each disease exhibited distinct TCM characteristics and mechanisms of action. Patients with prostate disease may benefit from acupuncture treatment, however, high-quality clinical evidence, standardized guidelines and exploration of the mechanisms of acupuncture for prostate diseases are needed in the future.

Keywords

Acupuncture; Prostate diseases; Chronic prostatitis/chronic pelvic pain syndrome; Benign prostatic hyperplasia; Prostate cancer; Traditional Chinese medicine

Una revisión narrativa de la acupuntura en enfermedades de la próstata: perspectivas de la medicina tradicional China, evidencia actual y direcciones futuras

Resumen

Las enfermedades prostáticas, incluyendo la prostatitis crónica/síndrome de dolor pélvico crónico (PC/SDPC), la hiperplasia prostática benigna (HPB) y el cáncer de próstata, se encuentran entre las afecciones más comunes en andrología y urología. Estas enfermedades afectan significativamente la calidad de vida de los pacientes y tienen un profundo impacto en su salud mental y psicológica. La acupuntura ha sido ampliamente utilizada para tratar enfermedades prostáticas, demostrando una notable eficacia y seguridad. Esta revisión sintetiza las perspectivas de la Medicina Tradicional China (MTC) sobre estas enfermedades, evalúa su aplicación clínica, resume los mecanismos de acción y propone futuras líneas de investigación. Nuestra revisión incluyó veinte ensayos clínicos sobre PC/SDPC, HPB y cáncer de próstata. La acupuntura demostró una eficacia significativa en el alivio de síntomas (reducción del dolor, mejoría de síntomas urinarios) y en la modificación de la enfermedad (reducción del volumen prostático). Los meridianos más frecuentemente seleccionados fueron el meridiano de la vejiga (taiyang del pie), el meridiano del bazo (taiyin del pie), el meridiano ren, el meridiano del pericardio (jueyin de la mano), el meridiano del hígado (jueyin del pie), el meridiano del corazón (shaoyin de la mano), el meridiano de la vesícula biliar (shaoyang del pie) y el meridiano del riñón (shaoyin del pie). Además, el tratamiento con acupuntura para cada enfermedad presentó características distintivas según la MTC y mecanismos de acción específicos. Los pacientes con enfermedades prostáticas podrían beneficiarse del tratamiento con acupuntura. Sin embargo, en el futuro se necesitan evidencias clínicas de alta calidad, guías estandarizadas y una mayor exploración de los mecanismos subyacentes a la acupuntura en estas patologías.

Palabras Clave

Acupuntura; Enfermedades prostáticas; Prostatitis crónica/síndrome de dolor pélvico crónico; Hiperplasia prostática benigna; Cáncer de próstata; Medicina tradicional China

1. Introduction

The prostate is the largest unpaired organ in the male reproductive system, and comprises glandular tissue, smooth muscle and connective tissue. Prostate diseases are common health problems that affect men of all ages, and they include prostatitis, benign prostatic hyperplasia (BPH) and prostate cancer [1–3]. Chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) is the most common type of prostatitis and accounts for 90%–95% of cases [4]. It may accelerate the progression of BPH and prostate cancer [5]. Moreover, chronic inflammation of the prostate is often observed in patients with BPH and prostate cancer [6, 7]. Common symptoms of prostate diseases include lower urinary tract symptoms, psychological and sexual dysfunction, which can affect the quality of life of male patients and even endanger their lives. Some treatments are currently available, such as alpha-blockers and 5 alpha-reductase inhibitors for some CP/CPPS or BPH patients, as well as androgen deprivation therapy (ADT) for selected prostate cancer patients [8–10]. However, these treatments often have some limitations and adverse effects (including postural hypotension, low libido, hot flash, *etc.*) making them difficult for patients to accept. Additionally, patients who received transurethral resection of the prostate (TURP) or radical prostatectomy (RP) may also experience catheter-related bladder discomfort, which needs some effective therapies to relieve [11, 12].

In some East Asian countries, people have used acupuncture to alleviate symptoms related to prostate diseases. As a non-pharmacological therapy, acupuncture has shown efficacy and safety in the treatment of CP/CPPS, BPH and prostate cancer, and has been recognized by many patients [13–15]. Previous reviews have focused more on acupuncture for single prostate disease [13–15]. As is known to many, acupuncture as a traditional Chinese Medicine (TCM) therapy guided by TCM theory, does not categorize conditions like CP/CPPS, BPH or prostate cancer, but treats them as essence chamber-related disorders [16]. Therefore, the treatment of these prostate diseases may have common treatment strategies, as they are all based on similar classic theories or principles of TCM. Despite many studies using acupuncture to treat prostate diseases, there is a lack of discussion on the selection of acupoints from the perspective of TCM. Since these prostate diseases share similar theoretical foundations in TCM, they may respond to common therapeutic strategies. This narrative review analyzes acupuncture's therapeutic rationale, particularly the understudied TCM-guided acupoint selection, to advance alternative therapies.

2. TCM view on prostate and prostate diseases

There is no mention of the prostate in ancient TCM texts, instead it corresponds to the essence chamber, which was first mentioned by some doctors during the late Ming and early Qing dynasties in ancient China. Due to limited anatomical knowledge and medical resources, the location of the essence chamber was initially unclear. However, ancient TCM doctors generally agreed that it was a male-specific organ near the large intestine and the bladder, regulating ejaculation and urination [17]. These descriptions closely align with the location and function of the prostate nowadays. Similarly, there was

no specific disease name for prostate disorders in ancient China, and they were collectively referred to as essence chamber disorders, characterized by lower urinary tract symptoms, hematuria, painful urination, dorsal urethral burning sensation and pelvic pain in men [18]. From the TCM perspective, many pathological factors can cause the loss of function in the essence chamber, such as dampness (disorder of tissue fluid metabolism), heat (inflammatory response), blood stasis (impaired microcirculation) and qi stagnation (autonomic nerve dysfunction). In some ancient TCM texts, the formation of these pathological factors involves many organs and meridian systems, including the functional dysfunction of the heart, liver, spleen, lung, kidney and their corresponding meridians, as well as the transmission disorders of ren meridian and chong meridian (Fig. 1).

3. TCM perspective on acupuncture in prostate diseases

Acupuncture promotes the flow of meridian, balances yin and yang, and regulates qi and blood circulation to improve local symptoms of the prostate. In terms of needle selection, acupuncture includes traditional acupuncture, electroacupuncture, auricular acupuncture and fire needling, all of which have their unique features and are guided by the common theory of meridians. Among them, traditional acupuncture and electroacupuncture are commonly used for prostate diseases because they can both alleviate pain symptoms and have the advantage of regulating neurological functions [19, 20]. Under the guidance of the meridian theory, acupuncture can exert synergistic effects by regulating different meridians' acupoints. For example, the spleen meridian of foot-taiyin, the bladder meridian of foot-taiyang and the ren meridian are mainly related to the generation of dampness, urine regulation, and male reproductive functions; the liver meridian of foot-jueyin is mainly related to blood stasis and qi stagnation; and the heart meridian of hand-shaoyin and the pericardium meridian of hand-jueyin mainly regulate psychological and emotional symptoms. Stimulating the acupoints on these meridians is beneficial for removing pathological factors such as damp, heat, blood stasis and qi stagnation that contribute to the onset of prostate diseases (Fig. 2). Acupuncture treatment of prostate diseases based on TCM theory has been widely applied in clinical practice.

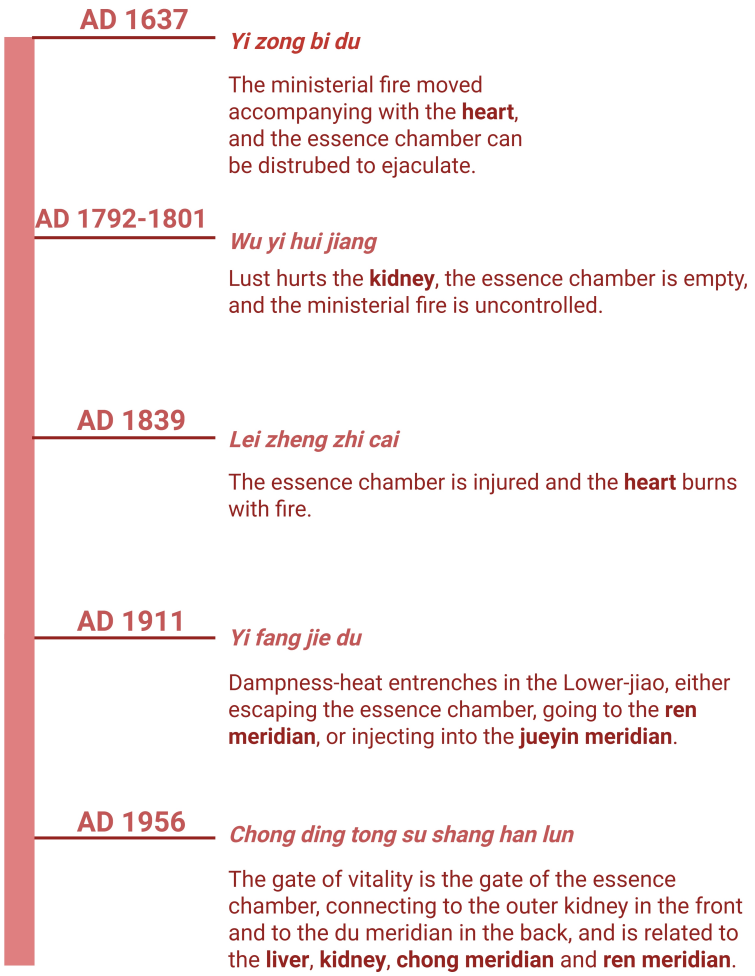

FIGURE 1. TCM views on essence chamber. (Created in BioRender. Wang, H. (2025) https://BioRender.com/p34z533). AD: Anno Domini.

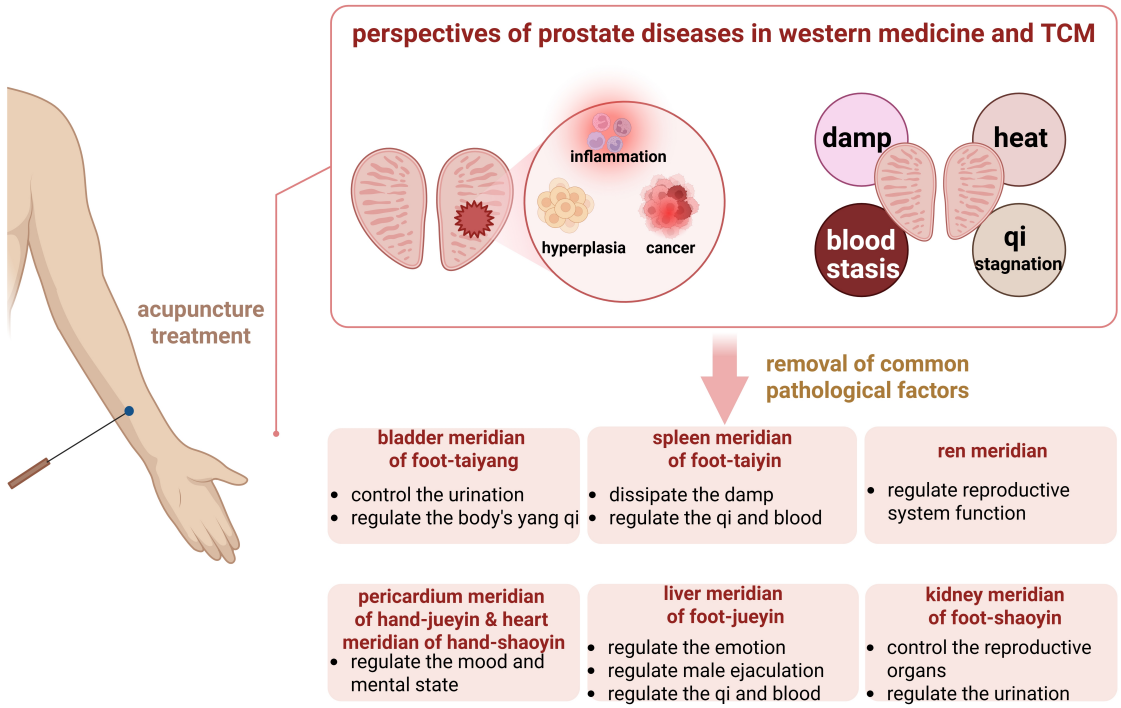

FIGURE 2. TCM views of acupuncture therapy in prostate diseases. (Created in BioRender. Wang, H. (2025) https://BioRender.com/d27d688). TCM: traditional Chinese medicine.

4. Current clinical studies of acupuncture therapy in prostate diseases

From the search strategy (Table 1), we finally included 20 articles, summarized in Table 2 (Ref. [21–40]).

Of these clinical studies, eleven articles are related to CP/CPPS, three articles are related to BPH, and the remaining six articles are related to prostate cancer. In addition to Harding *et al.*'s [39] application of auricular acupuncture (a specialized technique distinct from conventional acupuncture, stimulating acupoints in the ear area via needling), all articles chose conventional acupuncture or electro-acupuncture therapy. These clinical studies have confirmed that acupuncture therapy is effective and safe in treating prostate diseases. The retention time of most studies was set within the range of 20 to 30 minutes, and the treatment course was generally longer than 4 weeks. It is worth noting that one of the key characteristics of acupuncture include immediate effect, which apply to various diseases, such as neurological, urinary or reproductive system diseases, and has been elaborated in our previous reviews and clinical study [41–44]. This can also explain why Maurer *et al.* [35] and Hou *et al.* [34] by applying acupuncture therapy for one or three days, may have intended to verify the immediate effect of acupuncture treatment.

Among these clinical studies, the meridians with the highest frequency of use were the bladder meridian of foot-taiyang (41 times), spleen meridian of foot-taiyin (20 times), ren meridian (9 times), pericardium meridian of hand-jueyin (6 times), liver meridian of foot-jueyin (6 times), heart meridian of hand-shaoyin (5 times), gallbladder meridian of foot-shaoyang (5 times) and kidney meridian of foot-shaoyin (4 times). This pattern is consistent with the view in treating prostate diseases, that is, stimulating the acupoints of these meridians can eliminate the pathological factors such as dampness, heat, blood stasis, and qi stagnation that invade the prostate. In addition,

TABLE 1. The search strategy summary.

Items	Specification
Timeframe	Up to October 2024
Databases	PubMed
Search term used	Acupuncture, prostate disease, chronic prostatitis, benign prostatic hyperplasia, prostate cancer, prostate
Inclusion and exclusion criteria	Included studies: all clinical articles using single acupuncture treatment in English Excluded studies: case reports, letters, comments, review articles and non-English articles
Selection process	Authors conducted the selection independently

TABLE 2. Summary of the included studies.

References	Disease	Study type	Acupoints	Intervention	Results
Sun *et al*. [21]	CP/CPPS	RCT	BL33 (Zhongliao), BL35 (Huiyang), BL23 (Shenshu), SP6 (Sanyinjiao)	AC, 30 min, 20 sessions over 8 weeks	At week 8 and week 32, the proportions of responders (defined as patients who achieved a clinically important reduction of at least 6 points from baseline on the NIH-CPSI) were 60.6% and 61.5%, represently.
Qin *et al*. [22]	CP/CPPS	RCT	BL33 (Zhongliao), BL23 (Shenshu), BL35 (Huiyang), SP6 (Sanyinjiao)	AC, 20–25 min, 3 times a week for 8 weeks	The reduction in the NIH-CPSI total score differed significantly between the 2 groups at weeks 8, 20 and 32 with a difference of −5.7, −6.7 and −7.4, respectively.
Zhou *et al*. [23]	CP/CPPS	RCT	BL30 (Baihuanshu), BL35 (Huiyang)	EA, 30 min, 6 sessions for 2 weeks	Long needle acupuncture was more effective in reducing NIH-CPSI score compared with the traditional acupuncture at week 8 and week 24, and can also improve urination, pain, *etc*.
Sahin *et al*. [24]	CP/CPPS	RCT	BL33 (Zhongliao), BL34 (Xialiao), BL54 (Zhibian), CV1 (Huiyin), CV4 (Guanyuan), SP6 (Sanyinjiao), SP9 (Yinlingquan)	AC, 20 min, once a week for 6 weeks	92% patients were NIH-CPSI responders (>50% decrease in total NIH-CPSI score from baseline) at week 8, and success was 74% at week 24.
Kucuk *et al*. [25]	CP/CPPS	RCT	BL28 (Pangguangshu), GB41 (Zulinqi), LR3 (Taichong), LI4 (Hegu), SP6 (Sanyinjiao), SP8 (Diji)	EA, 2 times/week for 7 weeks	89.3% patients were NIH-CPSI responders (more than 50% decrease from the baseline of total NIH-CPSI score) after treatment.
Tugcu *et al*. [26]	CP/CPPS	UCT	BL33 (Zhongliao)	AC, 20 min, once a week for 6 weeks	92.47% patients were NIH-CPSI responders (more than 50% decrease in total NIH-CPSI score from baseline) at the end of the treatment.
Lee *et al*. [27]	CP/CPPS	RCT	BL32 (Ciliao), BL33 (Zhongliao), GB30 (Huantiao)	EA, 20 min, twice a week for 6 weeks	At 6 weeks, the NIH-CPSI total score had decreased significantly, and the pain-related symptoms also showed significantly improved.
Lee *et al*. [28]	CP/CPPS	RCT	CV1 (Huiyin), CV4 (GuanYuan), SP6 (Saninjiao), SP9 (Yinlingquan)	AC, 30 min, twice a week for 10 weeks	73% patients responded (a 6-point decrease in NIH-CPSI total score from baseline to week 10) after treatment and long-term responses in week 24 occurred in 32% of the patients.
Capodice *et al*. [29]	CP/CPPS	UCT	SJ5 (Waiguan), GB41 (Zulinqi), LR3(Taichong), LI4 (Hegu), SP8 (Diji), SP6 (Sanyinjiao)	AC, 20–25 min, twice a week for 6 weeks	Significant decreases in total NIH-CPSI scores after 3 and 6 weeks from baseline and remained after an additional 6 weeks of follow-up.

TABLE 2. Continued.

References	Disease	Study type	Acupoints	Intervention	Results
Honjo *et al.* [30]	CP/CPPS	UCT	BL33 (Zhongliao)	AC, 10 min, once a week for 5 weeks	The average pain and quality of life scores of the NIH-CPSI after the fifth acupuncture treatment decreased significantly compared with the baseline.
Chen *et al.* [31]	CP/CPPS	UCT	BL10 (Tianzhu), BL23 (Shenshu), BL28 (Pangguangshu), BL40 (Weizhong), KI10 (Yingu), KI1 (Yongquan), BL67 (Zhiyin), CV4 (Guanyuan), CV3 (Zhongji), SP6 (Sanyinjiao), BL54 (Zhibian), BL35 (Huiyang), BL39 (Weiyang)	AC and EA, 20 min, twice a week for 6 weeks	The NIH-CPSI score significantly decreased at week 6, and 83% patients had a sustained greater than 50% decrease in NIH-CPSI at 33 weeks.
Yu *et al.* [32]	BPH patients with lower urinary tract symptoms	RCT	CV3 (Zhongji), CV4 (Guanyuan), ST36 (Zusanli), SP6 (Sanyinjiao)	EA, 30 min, twice a week for 6 weeks	EA significantly increased the voiding volume, average flow rate, and maximal flow rate in BPH patients with lower urinary tract symptoms.
Wang *et al.* [33]	BPH	RCT	BL 33 (Zhongliao)	EA, 5 times a week for 2 weeks and 3 times a week for another 2 weeks	EA significantly reduced IPSS scores in patients with BPH and the efficacy could still retain at week 18.
Hou *et al.* [34]	BPH treated by TURP	RCT	Areas in wrist and ankle	AC, 24 hours, once a day for 1 day	The catheter-related bladder discomfort, and visual analogue scale were both improved in patients who underwent TURP after wrist-ankle acupuncture treatment.
Maurer *et al.* [35]	Perioperative pain after open radical prostatectomy	RCT	HT7 (Shenmen), PC6 (Neiguan), SP6 (Sanyinjiao)	AC, the press tack needles remained until approximately 10:00 AM on postoperative day 3	The acupuncture treatment reported significantly less postoperative pain compared to the sham acupuncture treatment.
Beer *et al.* [36]	Hot flashes in prostate cancer	UCT	GB34 (Yanglingquan), BL15 (Xinshu), BL23 (Shenshu), BL32 (Ciliao), GV20 (Baihui), HT7 (Shenmen), PC6 (Neiguan), LI2 Xingjian), SP6 (Sanyinjiao), LI3 (Taichong)	AC and EA, 30 min, twice a week for the first 4 weeks and once a week for an additional 6 weeks	41% (9/22) of patients responded by week 4 and 55% (12/22) overall providing evidence of a potentially meaningful benefit.
Frisk *et al.* [37]	Hot flashes in prostate cancer	RCT	BL15 (Xinshu), BL23 (Shenshu), BL32 (Ciliao), GV20 (Baihui), HT7 (Shenmen), PC6 (Neiguan), LR3 (Taichong), SP6 (Sanyinjiao), SP9 (Yinlingquan)	AC and EA, 30 min, twice a week for the first 2 weeks and once a week for an additional 10 weeks	Hot flushes per 24 hours and distress by flushes decreased significantly in both traditional acupuncture group and electrostimulated group after 12 weeks. The effect lasted up to 9 months after treatment ended.

TABLE 2. Continued.

References	Disease	Study type	Acupoints	Intervention	Results
Ashamalla *et al*. [38]	Hot flashes and history of androgen ablation therapy for prostate cancer	UCT	GB34 (Yanglingquan), SP6 (Sanyinjiao), KI3 (Taixi), ST36 (Zusanli), BL15 (Xinshu), BL23 (Shenshu), Taiyang, HT7 (Shenmen), PC6 (Neiguan), LI 11 (Quchi)	AC and EA, 30 min, twice a week for the 4 weeks	The mean hot flash score was significantly droped at week 2, week 6 and month 8.
Harding *et al*. [39]	Vasomotor symptoms associated with LHRH agonist treatment for prostate cancer	UCT	auricular acupuncture (Kidney, Autonomic, Shenmen, Liver and Lung)	auricular AC, 40 min, once a week for the 10 weeks	95% of patients reported a decrease in the severity of symptoms.
Hammar *et al*. [40]	Vasomotor symptoms in men with prostate cancer	UCT	BL15 (Xinshu), BL23 (Shenshu), BL32 (Ciliao), GV20 (Baihui), HT7 (Shenmen), PC6 (Neiguan), LR3 (Taichong), SP6 (Sanyinjiao), SP9 (Yinlingquan)	AC and EA, 30 min, twice a week for 2 weeks and once a week for 10 weeks	At 10 weeks (during the treatment) and 3 months (after the last treatment), the number of flushes was 70% and 50% lower than before therapy respectively.

RCT: randomized controlled trial; UCT: uncontrolled trial; CP/CPPS: chronic prostatitis/chronic pelvic pain syndrome: BPH: benign prostatic hyperplasia; TURP: trans urethral resection prostate; AC: acupuncture; EA: electro-acupuncture; NIH-CPSI: National Institutes of Health Chronic Prostatitis Symptom Index; IPSS: international prostate symptom score.

TCM believes that the source of these pathological factors leads to yin-yang and qi-blood dysfunctions of the zang-fu organs, such as the abnormal physiological functions of the bladder, spleen and liver. Stimulating the acupoints of these meridians (acupoints near the prostate and those on the limbs) can also regulate the functions of the zang-fu organs and regulate yin-yang and qi-blood of the whole body. These stimulations at different body positions throughout the body explain the meridian theory and the concept of treating both the whole body and the local area simultaneously [45]. Acupuncture for prostate diseases has a common TCM meridian theory as a guideline. However, CP/CPPS, BPH and prostate cancer have their specific characteristics, and acupuncture for a single disease also highlights individualized treatment in terms of intervention, which is common in the clinical practice of TCM [46]. Therefore, it is necessary to further discuss the efficacy and advantages of acupuncture for each prostate disease.

5. Acupuncture in CP/CPPS

CP/CPPS affects 2%–15% of adult men especially middle-aged individuals, with chronic symptoms lasting at least 6 months [47]. The main goal of CP/CPPS treatment is to relieve pain, reduce urinary symptoms and improve quality of life. Acupuncture has advantages particularly in relieving urinary symptoms and pain [48], and its effect may not be influenced by the ejaculation frequency [49]. Our previous review showed that the factors influencing the therapeutic effect of acupuncture on CP/CPPS include the depth of needling, the selection of acupoints and the treatment course [50]. Among them, the locations of these acupoints are mostly found on the bladder meridian of foot-taiyang, ren meridian and spleen meridian of foot-taiyin, such as BL33 (Zhongliao) and CV4 (Guanyuan) [50]. We speculate that the selection of these acupoints, which are near the prostate, may be more applicable to the TCM theory of "pain as acupoint". Also, CP/CPPS often manifests as pain in the lower abdomen and lumbosacral region, and these localized or pressure pain points can be used as A-shi acupoints for needling [51]. Notably, BL33 (Zhongliao) and CV4 (Guanyuan) are located in these pain areas as well [24]. In addition to the selection of acupoints, the study by Wang *et al*. [52] was derived from a secondary analysis of a large multicenter clinical study. The results showed that patients with a non-sedentary lifestyle, no smoking habits, no comorbidities, and a severe National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI) total score benefited more from the acupuncture treatment [52].

In our previous review, the mechanism of acupuncture in treating CP/CPPS were mainly focused on neuromodulation, immunomodulation and anti-inflammatory function, including the regulation of neurotransmitters, inflammatory factors and immune cells [50]. It is well known that CP/CPPS patients are often accompanied by some psychosomatic symptoms, which are important factors in the recurrent, prolonged and poor outcome of CP/CPPS [53]. A Chinese-language study also confirmed the positive significance of acupuncture in improving the Self-Rating Anxiety Scale and Self-Rating Depression Scale in CP/CPPS patients [54]. Acupuncture's improvement of anxiety and depression symptoms is similar to its role in regulating the "spirit" in TCM theory, and these studies have also focused more on the acupoints of the heart meridian of hand-shaoyin, pericardium meridian of hand-jueyin and the liver meridian of foot-jueyin [25, 29], or some specific acupoints for regulating the "spirit", such as GV20 (Baihui) and GV29 (Yintang). The correlation of activities between the brain and reproductive organs may be regulated by the liver meridian of foot-jueyin [55], and acupuncture of the five Shu-acupoints of the liver meridian of foot-jueyin combined with bloodletting is effective in relieving depression symptoms and improving blood rheology in depression patients [56]. Additionally, evidence has identified that electroacupuncture in GV29 (Yintang) and GV20 (Baihui) could ameliorate depressive-like behaviors in rats possibly by regulating the expression of fibroblast growth factor in the hippocampus [57].

6. Acupuncture in BPH

BPH mainly includes symptoms in the storage phase such as urinary frequency, urgency, dysuria and frequent nocturia, and symptoms in the voiding phase such as interruption of urination, straining to urinate, thinning of the urinary line and intermittent micturition, as well as symptoms of dysuria and residual leaking after micturition [58]. The International Prostate Symptom Score (IPSS) is a common tool that assesses the severity of prostate enlargement symptoms [59]. It assesses BPH-related symptoms through a series of questions, including frequency of urination, urgency and dysuria. From a meta-analysis, statistically significant changes were observed in favor of acupuncture in moderate to severe BPH with respect to short-term follow-up endpoints (mean difference −3.01, 95% CI −5.19 to −0.84) [14], and another meta-analysis showed that the long-term efficacy could last up to 12 weeks [33]. From the results of meta-analysis, the diversity in the selection of acupoints, needles, frequency of stimulation, duration of treatment, and assessment of outcome indicators introduced potential information bias [14]. Notably, acupuncture also relieves postoperative symptoms such as catheter-related bladder discomfort in BPH patients after transurethral resection of the prostate (TURP) [34]. Nevertheless, no significant changes in BPH imaging examination results were observed from the pre-treatment period to post-treatment with acupuncture [60].

Acupuncture treatment for BPH mostly follows the meridian theory, selecting local acupoints such as abdominal and lumbosacral acupoints, as well as acupoints on the limbs according to our review. From TCM perspectives, acupoints of the bladder meridian of foot-taiyang and the ren meridian in the lower abdomen, can alleviate urinary symptoms. These meridians help control urination and benefit the yang qi, thereby removing the dampness and blood stasis in the prostate as well as the whole body. However, there is still a lack of evidence about the mechanism of acupuncture in the treatment of BPH. Current studies suggest that estrogen receptors such as estrogen receptor alpha may be involved in the proliferative and inflammatory processes of the prostate [61], whereas estrogen receptor β has an antagonistic effect on estrogen receptor α, thus mediating anti-proliferative, pro-apoptotic, and anti-inflammatory processes, [62]. Pan *et al*. [63] reported that acupuncture can improve the transcription

level of estrogen receptor β mRNA in prostate tissues, the distribution of estrogen receptor α expression in epithelial cells, and influence the aggregation of estrogen receptors in hyperplastic nodules. There are also some suggestions that acupuncture modulates the cerebral cortex to improve urinary symptoms [64], since some studies have suggested that the expression of c-Fos was high in some regions such as medial preoptic nucleus, pontine micturition center in stress urinary incontinence, and that acupuncture considerably reduced c-Fos expression in these regions [65].

7. Acupuncture in prostate cancer

Prostate cancer is one of the most common male tumors worldwide, and its prevalence has increased gradually in recent years [66]. RP and ADT have been widely used as treatment options. RP is often accompanied by a series of postoperative complications especially lower urinary tract symptoms and pain [67]. ADT can significantly reduce the body levels of androgen in the body, to achieve the purpose of inhibiting the development of prostate cancer, but 30.7% of prostate cancer patients undergoing ADT experienced hot flashes, accompanied by episodes of heat and sweating, with possible co-occurring palpitations and anxiety [68]. From a systematic review, men with post-prostatectomy incontinence could benefit from acupuncture or the combination of acupuncture with other therapies [69], and acupuncture combined with pelvic floor muscle training is more effective than pelvic floor muscle training alone in improving quality of life and reducing nocturia and urgency [70]. Although the cumulative and sustained effects of acupuncture in the treatment of pain induced by CP/CPPS have been confirmed, the immediate effect seems to be more obvious in pain induced by RP. Maurer *et al*. [35] applied a 3-day acupuncture treatment for acute postoperative pain management, and the immediate effect has been confirmed based on changes in the numeric rating scale before and after treatment. Also, acupuncture may relieve hot flashes in prostate cancer patients undergoing ADT. Beer *et al*. [36] explored the efficacy of acupuncture on hot flash frequency and intensity, quality of life, and sleep quality in patients undergoing hormonal therapy for prostate cancer, and the results showed that after 4 weeks, 9 of 22 patients had a more than 50% reduction in the hot flash score, and a reduced hot flash score was associated with improvement in the quality of life and sleep quality. Another randomized controlled trial reported that after 12 weeks, electroacupuncture and acupuncture significantly improved the symptoms of hot flushes, and the hot flush score decreased 78% and 73%, respectively [37]. Interestingly, the effect persisted up to 9 months after treatment ended [37].

In Table 2, acupuncture strategies for prostate cancer may vary in the selection of acupoints and the course of treatment depending on the different therapeutic purposes. From a TCM perspective, acupuncture can regulate qi and spirit to control urination, improve the pain caused by qi stagnation and blood stasis, and improve the hot flushes by benefiting yin and inhibiting heat [71]. Although previous studies have not confirmed the specific mechanism by which acupuncture improves symptoms associated with prostate cancer, we speculate that acupuncture exerts analgesic effects by regulating neurotransmitter release, improving local neurological function, reducing local edema between tissues and releasing various opioid peptides, similar to its mechanism in CP/CPPS [50]. In addition, acupuncture may affect the activity and responses of nerve stimulation in the thermoregulation center such as the serotonin, noradrenalin, and β-endorphin activity in the central nervous system to improve vasomotor symptoms [72–74]. The occurrence of hot flashes is usually associated with high neuronal activity in the hypothalamus, and acupuncture may reduce this activity through increasing β-endorphin release and decreasing noradrenaline activity [75].

8. Limitations and perspectives

Our manuscript is a narrative review rather than a systematic review, and we do not have a rigorous preferred reporting items for systematic reviews and meta-analyses-based search strategy. From this review, acupuncture for prostate diseases has a common theoretical basis in TCM, as the selection of meridians and acupoints is based on the ancient perspectives of the essence chamber. Nevertheless, TCM emphasizes syndrome differentiation and treatment, and the selection of appropriate treatment strategies is based on individual differences [42]. This includes the adjustment of acupoints according to TCM syndrome types, which requires the support of theoretical and diagnostic knowledge from TCM Therefore, it is difficult to widely promote the use of acupuncture therapy in some Western countries. Some researchers also attempted to use acupuncture in combination with other therapies, and results have also shown that combination therapies can achieve better clinical efficacy than single acupuncture therapy or conventional Western medicine [76, 77]. It demonstrates the advantages of combination therapies and the promise of the application of acupuncture as an alternative and adjunctive option. Despite this, the acupuncture options chosen by different clinical studies for the same disease or symptom are not consistent in Table 2. This seems to be related to clinical experience, theoretical guidance and patient characteristics. Also, due to the lack of high-quality clinical evidence, there are still no recognized acupuncture guidelines or strategies for prostate diseases at present.

The pathogenesis of prostate diseases can be explained by dampness, heat, blood stasis and qi stagnation from a TCM perspective. However, there are also limitations in TCM perspectives, including the lack of molecular biological evidence to support them. We must also acknowledge potential biases in TCM-based studies (*e.g.*, lack of blinding, placebo effects). With the increasing use of acupuncture in prostate diseases in recent years, basic studies on the mechanisms are still lacking. Therefore, applying standardized experiments to validate the mechanism of acupuncture in treating prostate diseases, as well as combining it with TCM theory, including validating the role of meridian stimulation and elucidating the biological basis of dampness, heat, blood stasis and qi stagnation, is still significant. There is still a long way to go from ancient TCM theory to current clinical and experimental studies, and to future improvements in treatment guidelines and clarification of mechanisms of action (Fig. 3).

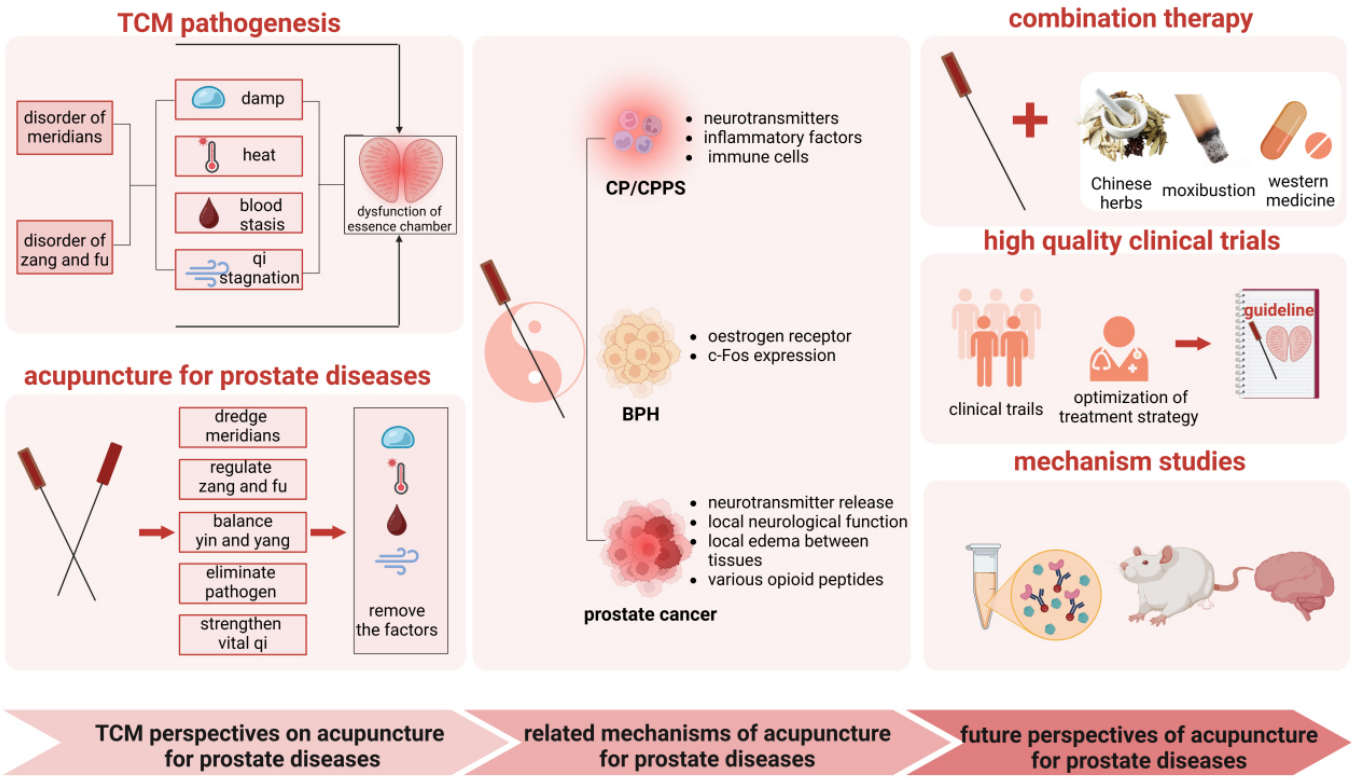

FIGURE 3. TCM views, research progress and future perspectives of acupuncture for prostate diseases. (Created in BioRender. Wang, H. (2025) https://BioRender.com/r35p024). TCM: traditional Chinese medicine; CP/CPPS: chronic prostatitis/chronic pelvic pain syndrome; BPH: benign prostatic hyperplasia.

9. Conclusions

Our review evaluates the clinical effects of acupuncture on prostate diseases from the perspective of TCM. Acupuncture for prostate diseases is mainly based on the meridian theory, and the acupoints of the bladder meridian of foot-taiyang, spleen meridian of foot-taiyin, ren meridian, pericardium meridian of hand-jueyin, heart meridian of hand-shaoyin, liver meridian of foot-jueyin, among others are effective in removing the factors such as dampness, heat, blood stasis and qi stagnation. While acupuncture has its benefits in treating CP/CPPS, BPH and prostate cancer, one major limitation is the difficulty of obtaining high-quality evidence due to challenges in blinding and study design. Future research should focus on conducting high-quality clinical trials to establish standardized treatment guidelines. Additionally, greater emphasis on basic experimental studies is needed to further elucidate the underlying mechanisms of acupuncture in the treatment of prostate diseases.

AVAILABILITY OF DATA AND MATERIALS

The data are contained within this article.

AUTHOR CONTRIBUTIONS

HW and BY—designed the research study. DS and HYC—performed the research. HW—provided help of the figures. DS, HYC, DCL and GCD—wrote the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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