

# *Acupuncture for hot flashes in men treated with androgen deprivation therapy*

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*In men with advanced carcinoma of the prostate being treated with androgen deprivation therapy (ADT), hot flashes can be a significant side effect of the treatment.*

*In this paper we describe using acupuncture as a complementary alternative therapy for treatment of hot flashes in men.*

**Key Words:** acupuncture, hot flashes, androgen deprivation therapy

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## Introduction

Acupuncture has been around for over 2000 years and is becoming a common adjunct to Western Medicine. Most hospital systems have developed a complementary and alternative medicine (CAM) program, including acupuncture for the treatment of pain and medical issues associated with malignancies. In addition, acupuncture for hot flashes is often used for women suffering from menopause and women with breast cancer treated with anti-estrogens. Acupuncture is employed to help avoid the side effects of hormone replacement therapy (HRT), as well as other commonly used medications for the treatment of hot flashes.

Some centers have started employing acupuncture for the treatment of hot flashes in men treated with androgen deprivation therapy (ADT) for cancer of the prostate. One reviewer states that the incidence of hot flashes in men treated with ADT may be similar to that in post-menopausal women, with an estimate of about 75%.<sup>1</sup> Studies have shown that hot flashes have a significant impact on quality of life after ADT and most patients seek treatment.<sup>2</sup>

Common medications used for the treatment of hot flashes include selective serotonin reuptake inhibitors (SSRI), serotonin/norepinephrine reuptake inhibitors (SNRI) and gabapentin. While moderately effective, these drugs are costly and have been associated with a number of side effects including nausea, dry mouth, dizziness, and anxiety.<sup>3</sup> A recent randomized controlled trial of venlafaxine versus acupuncture for the treatment of hot flashes after anti-estrogen hormone therapy for breast cancer showed that acupuncture is as effective as drug therapy, but without adverse effects. The patients who received acupuncture therapy also reported an improvement in their energy level and sense of well-being.<sup>3</sup>

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Multiple studies have demonstrated that acupuncture is a safe and effective treatment option for men with hot flashes secondary to ADT. While the methodology and treatment duration varied across these acupuncture trials, they all reported similar results with a reduction in hot flash score ranging from 70%-89.2%.<sup>4,6</sup> In addition, a recent review found that at least a 3 month durability after the end of treatment could be expected from acupuncture for hot flashes.<sup>7</sup>

## Mechanism of hot flashes

It is presumed that the physiological mechanism of hot flashes in men treated with ADT is similar to menopausal women and women treated with anti-estrogens, since the symptoms are similar in all groups and occur with the withdrawal of sex hormones.<sup>8</sup> A hot flash may be described as a subjective feeling of heat, accompanied by profuse sweating and shivering that may last a few minutes. In addition, patients may experience reddening of the skin of the face, head and neck secondary to increased skin blood flow during these episodes. These phenomena occur as a result of a decreased set point of the hypothalamic thermoregulatory center and the resultant heat loss mechanisms. This change in set point is likely due to aberrations in endorphin and serotonin levels in the central nervous system.<sup>1,8</sup>

Evidence has shown that estrogen and testosterone stimulate endorphin production and that a decreased level of estrogen is associated with decreased serotonin levels in the blood.<sup>8</sup> In the hypothalamus, it is thought that the thermoregulatory set point is lowered by norepinephrine. Endorphins are known to tonically inhibit norepinephrine production and release in the thermoregulatory centers of the hypothalamus. In men treated with ADT, it is this reduction in endorphins that mediates the process of lowering the thermoregulatory set point and ultimately the activation of heat loss mechanisms resulting in a hot flash.<sup>8</sup>

While the role of serotonin in the thermoregulatory pathway is not completely understood, it is known that activation of certain serotonin receptors in the hypothalamus mediates heat loss.<sup>8</sup> The decreased levels of serotonin experienced with estrogen withdrawal causes an up-regulation of serotonin receptors in the hypothalamus. The activation of these receptors secondary to external stimuli may trigger a hot flash.<sup>1,8</sup>

Studies of acupuncture's physiological effects have shown that the release of endorphins and serotonin mediate its analgesic effects.<sup>9</sup> With the understanding of the role of endorphins and serotonin in the mechanism of

hot flash development, it is presumed that acupuncture may help mitigate the effects of sex hormone withdrawal and reduce the frequency and severity of hot flashes in men treated with ADT.

## Method and technique

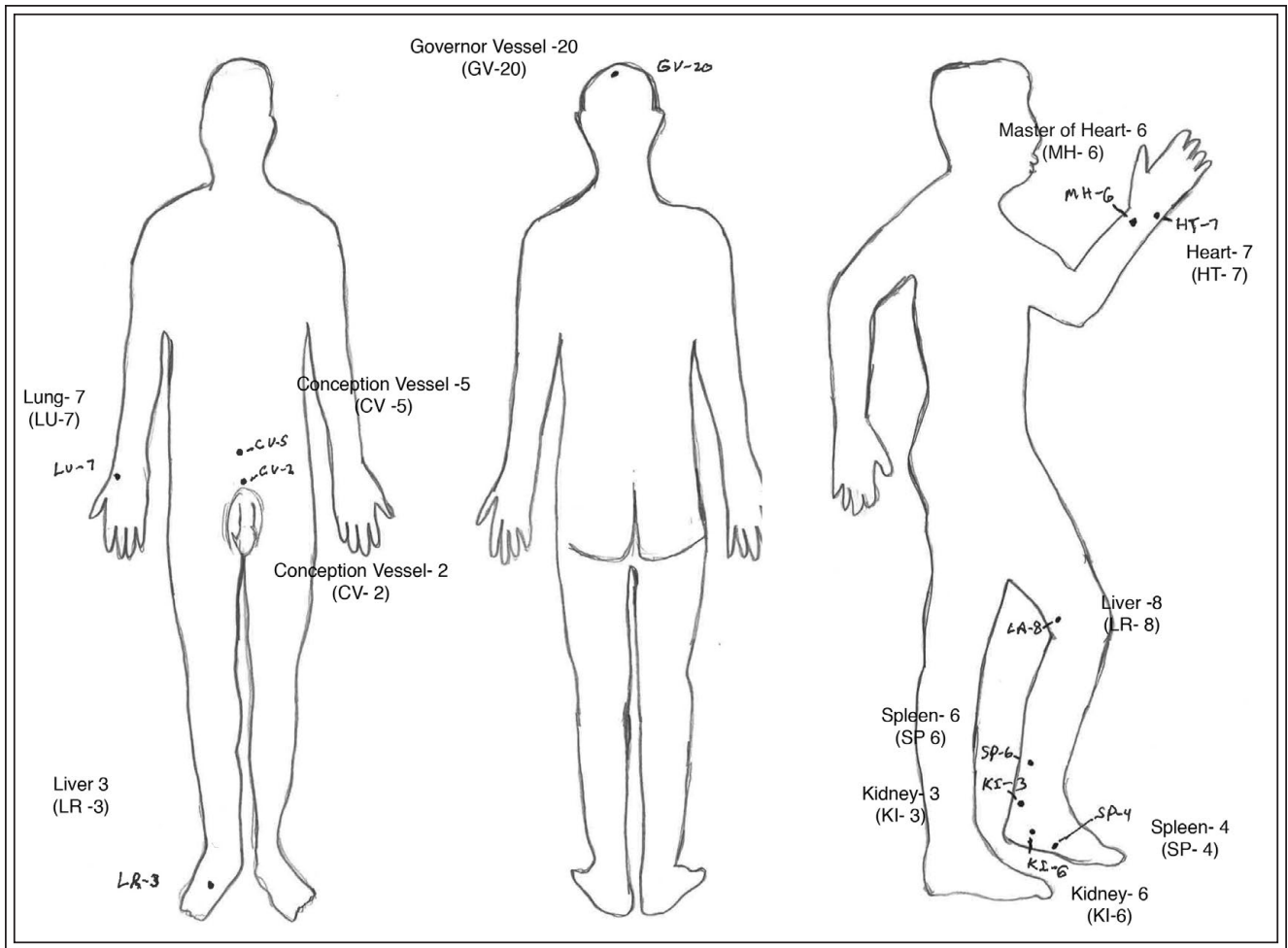
### *Patient selection*

All patients undergoing acupuncture therapy had a biopsy proven diagnosis of prostate cancer treated with ADT. In addition, patients reported at least 10 or greater number of hot flashes per day in the moderate to severe range. There is currently no standardized hot flash scoring system. In this study a modified severity rating scale was used between 1-3 (1 – mild, 2 – moderate, 3 – severe). The patients were asked to keep a daily diary of the number of hot flashes per 24 hour period and the severity of each hot flash. This diary was reviewed with the patient periodically during the treatments to assess for effectiveness of the acupuncture therapy. A history and physical examination, as well as an acupuncture examination, was performed before beginning each treatment.

### *Treatment*

Acupuncture treatment was performed by a physician acupuncturist licensed in the Commonwealth of Pennsylvania. Patients were treated twice a week for a total of 6 weeks of treatment. At each session, sterile disposable Seirin needles (Seirin Corporation, Shizuoka, Japan) were placed until "de qi" sensation was achieved with all 12 acupuncture points shown in Figure 1 and described in Table 1. "De qi" is described as a sensation of the needle being grabbed by the muscle according to the acupuncturist and described by the patient as a sensation of electrical activity, tension, or numbness.<sup>10</sup> The needles were left in place for 45 minutes and periodically cooled with surgical sponges placed in ice water and then wrapped around the top of the acupuncture needles for 1 minute. This process was performed for the dispersion or release of energy.

In acupuncture, one must determine whether the problem is one of excess (Yang character) or one of deficiency (Yin character). Yang problems are treated with techniques of dispersion where the needles are either not touched, rotated counter-clockwise, or have their handles cooled to allow the energy to disperse. Yin problems are treated with techniques of tonification where the needles are rotated manually in a clockwise rotation, heated, or electrically stimulated. The traditional mandate is to treat Yin problems with Yang input and Yang problems with Yin input.<sup>10</sup>



**Figure 1.** Anatomical location of 12 acupuncture points used during acupuncture treatment.

**TABLE 1. Description of acupuncture points used for treatment**

Kidney 3	Stimulates and sedates kidney energy including urinary frequency, menstrual problems, and sexual dysfunction.
Kidney 6	Helps urinary problems, sterility, fatigue, and heat dispersion.
Liver 3	Sedation point for anxiety, insomnia, and excess heat.
Liver 8	Helps pelvic and urinary dysfunction, as well as genital pain and inflammation.
Spleen 4	Useful for menstrual and endocrine disorders.
Spleen 6	Good for immune and endocrine problems, including insomnia.
Conception vessel 2	Strong point for all genitourinary and gynecologic disorders.
Conception vessel 5	Helps abdominal pain, heat dispersion, and urinary retention.
Governer vessel 20	Disperses heat, calms agitation and headaches.
Master of heart 6	Readjusts emotional symptoms and excess heat.
Heart 7	Strong sedation point to disperse heat, agitation, and emotional disorders.
Lung 7	Controls pain and heat, and controls excesses of respiratory problems.

## Conclusion

Multiple studies support the use of acupuncture to significantly reduce the frequency and severity of hot flashes in prostate cancer patients undergoing ADT. The benefit may decline over time and require repeated treatments.

The clinical improvement is likely related to acupuncture's ability to stimulate the release of endorphins, norepinephrine, and serotonin in the hypothalamic thermoregulatory nucleus and modulate the peripheral autonomic nervous system leading to peripheral vascular dilatation.

Thus far seven males on androgen deprivation therapy for prostate cancer have been treated with acupuncture for hot flashes at our center. All of the men had significant reduction in the severity of their hot flashes from grade 3 (severe) to grade 2 (moderate) and grade 1 (mild). The men also had greater than a 50% reduction in the daily number of hot flashes. Larger trials are needed to justify these results.

Until Western Medicine develops a safe and effective treatment with relatively few side effects, acupuncture should be strongly considered as an alternative, non-harmful treatment for hot flashes. □

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