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REVIEW ARTICLE

Acupuncture as Cancer Symptom Therapy: What a Difference a Decade Makes

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Abstract
The author reviews the use of acupuncture in cancer symptom management based on mainly what his group has done for the past 10 years and new directions are presented for the future investigations.

1. Introduction

The discussion of the success of acupuncture in post-operative pain relief by a reporter of the *New York Times* while in China in 1971 [1] is widely regarded as the tipping point of the rise of acupuncture towards "conventionality" in Western thought. It was more than 25 years before the next major impetus: the National Institutes of Health (NIH) sponsored a consensus panel on the use of acupuncture in 1997 [2]. In the conference recommendations the potential applications discussed were exclusively in symptom management.

Our group, in 2001, was the first to publish a report in a major oncology journal on the use of acupuncture [3]. It has been followed since by ten other studies [4—13], each dealing with the use of acupuncture in symptom management. The pace of publication has increased in recent years, with three randomized acupuncture trials reported in 2010 in the *Journal of Clinical Oncology* [10—12]. During the 2011 annual meeting of the Multinational Association of Supportive Care in Cancer, in Athens, six abstracts dealt with acupuncture for symptom relief [14]. There seems no doubt that acupuncture should no longer be considered a "complementary" therapy in the *milieu* of cancer symptom management; our task now is to fashion mechanisms for our patients to avail themselves of the opportunity.

2. Integration into usual clinical practice

The author's experiences integrating acupuncture into conventional patient care began while on active duty in the United States Navy in the late 1990s. Medical services and medications at large military treatment facilities, such as the Naval Medical Center San Diego, are provided to active duty military personnel in the U.S. Armed Forces and their dependents at no cost. Retirees and their dependents have access to military healthcare either on a space-available basis, or by enrolling in the U.S. Department of Defense healthcare plan. Because of these benefits, access to care and ability to pay seldom contribute to quality of care for this population.

At that time, a single physician acupuncturist received privileges and recruited several other physicians to receive

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specialized training in medical acupuncture. Eligible patients initially were restricted to those with cancer. Patients with symptoms related to cancer or to cancer therapy were offered acupuncture as potential palliation of their symptoms. It was under these circumstances that our initial success using acupuncture for radiation-induced xerostomia in patients with head and neck cancer was documented [3,4]. Central to this service was 100% peer review of patients' acupuncture charts, and monthly meetings for discussion of practice issues and new data. We have previously reported the peer review and monthly summary forms used in this process [15]. That work remains the only published discussion of acupuncture peer review in the academic setting.

Coincident with this burgeoning recognition of the validity of acupuncture in cancer symptom management was a burgeoning understanding of the role of integrative therapies in general in cancer care. The Society for Integrative Oncology had its first meeting in New York City in November 2004. It has met annually since with its eighth international meeting scheduled for November in Cleveland. The Society on Acupuncture and Meridian Studies (SAMS) had its first meeting in Korea in 2005. In recent recognition of the international scope of its membership, the society has added the word "International" to its name. The 2011 I-SAMS meeting is scheduled for October in southern California, with subsequent annual meetings scheduled for Australia and Europe.

Finally, there is an ongoing cooperative group trial assessing the use of electrostimulation for relief of xerostomia in randomized fashion. Radiation Therapy Oncology Group trial 0537 randomizes patients with xerostomia after radiotherapy for head and neck cancer either to electrostimulation of acupoints or pilocarpine pharmacotherapy.

Perhaps the two most telling examples of the integration of acupuncture into conventional care are administrative not clinical. First, a literature has grown describing acupuncture risk management [16]. This recognizes the central nature of safety in healthcare in general in the U.S.A. Second, and most crucially, Current Procedural Terminology codes have emerged to allow reimbursement by Medicare for acupuncture and electroacupuncture services [17]. With mechanisms for reimbursement, and available metrics to measure clinical quality, acupuncture clearly has crossed from a complementary therapy to an accepted standard of care.

3. Symptom clusters

In 2001, Dodd and colleagues proposed the construct of "symptom clusters" [18]. This definition addresses patients suffering three or more related and concurrent symptoms. First defined in cancer, the symptoms may be due to any disease, to its treatment, or to some unique aspect of survivorship. Simple coexistence of symptoms at the same time is necessary but not sufficient; evidence of linkage or relationship is required. The NIH sponsored a conference on symptom management the following year; attendees concluded that refinement of the symptom cluster concept was needed [19]. To this end, the NIH sponsored a grant opportunity (PA-05-004: Symptom Clusters in Cancer and Immune Disorders) to further characterize the construct. Significant research is necessary to interpret mechanisms of symptom interrelationship within clusters, assessment of severity of known symptom clusters, and to identify new clusters.

An interesting example of such research was published by Chow and colleagues in 2007 [20]. The Edmonton Symptom Assessment Scale was used as a metric to investigate clustering of symptoms in over 500 cancer patients with bone metastases. In this study, a cluster was defined as "two or more" symptoms "that occur together, are stable, and are relatively independent of other clusters" [20]. Three clusters were identified with Cronbach α coefficient ranging from 0.61 to 0.81: depression/anxiety ($\alpha = 0.81$); breathlessness/nausea/lack of appetite ($\alpha = 0.61$); and fatigue/pain/drowsiness/poor sense of well-being ($\alpha = 0.77$).

When treating such clusters, classic practice has been to treat each separately. This contributes to polypharmacy and an increasing likelihood of drug interactions. Acupuncture presents a unique mechanism for a single therapy of symptom clusters. A unique aspect of Oriental medicine in general, and of acupuncture in particular, is recognition of the unique and reciprocal impact of the patient and the disease and its symptoms. An example is the fairly straightforward Western diagnosis of cholecystitis/cholelithiasis. Flaws and Sionneau, in their text [21], provide six different Chinese Medicine diagnoses for this condition depending on the symptom pattern and examination findings involved. Table 1 reviews those symptoms and treatment principles. As shown in the Table, disparate acupoints are recommended based on the unique aspects of any case.

As a further example, our group performed a randomized control trial [22] to investigate the role of acupuncture to the Kidney–Bladder Distinct Meridian in men with lower urinary tract symptoms (LUTS) as assessed using the International Prostate Symptom Score (IPSS). Thirty patients were randomly assigned either to one of three study groups: (1) observation for 3 months; (2) nine sessions of electroacupuncture over 3 months to points of the Kidney–Bladder Distinct Meridian; or (3) nine sessions of acupuncture over 3 months to sham locations not corresponding to any acupoints. All patients underwent blood draws for prostate-specific antigen (PSA) levels, and IPSS values were collected monthly. The study, published in the *Journal of Urology*, revealed no significant differences over the 3-month study period between the randomized arms ($p = 0.063$ for IPSS, $p = 0.945$ for PSA and $p = 0.370$ for free/total PSA ratio). We warned that such negative results do not mean that acupuncture is of no use in patients with LUTS; simply that acupuncture of the Kidney–Bladder Distinct Meridian is ineffective.

4. New directions

Our group is now focusing dually on expanding academic practice into the community and expanding objective measurement of symptom severity. In San Diego all acupuncture providers were physicians because of the simpler and more straightforward privileging process. The LUTS trial used a single provider for all patients. However, recognition of the central nature of licensed acupuncturists

Table 1 Chinese medicine patterns related to the Western diagnoses of cholecystitis/cholelithiasis.*

Pattern	Main symptoms	Examination findings	Treatment principles	Acupuncture points
Liver-Gallbladder depression and stagnation	Insidious right-sided rib-side pain or distention and pain possibly radiating to the upper back and right shoulder, chest and ductal oppression, nausea, vomiting, aversion to oily, slimy food, reduced appetite, belching, possible slight fever, a dry mouth with a bitter taste, emotional tension, easy anger, irregular bowel movements	A possibly red tongue with thin, white or thin, yellow tongue fur and a bowstring pulse	Course the liver and rectify the *qi*, disinhibit the gallbladder and expel stones	GB-24 on right; GB-34; TB-6; BL-19; *Dan Nang Xue*
Damp heat internally brewing	Severe right-sided rib-side distention and pain, ductal and abdominal distension and fullness, palpable pain in the gallbladder area and pain when pressed, palpation pain at SI-11 and *Dan Nang Xue*; torpid intake, nausea, vomiting, dry mouth with a bitter taste, thirst with no desire to drink, fear of cold and emission of heat or cold and heat mixed together, jaundice	Dry stools, yellow urine, slimy, yellow tongue fur, however, if heat is heavy, there may be a dry, yellow fur, and a bowstring, slippery, rapid pulse	Clear heat and disinhibit dampness, disinhibit the gallbladder and expel stones, free the flow on the interior	GB-24 on right; GB-34; TB-6; BL-19; *Dan Nang Xue*; must be used with Chinese medicinals
Heat toxins burning and blazing	Severe right-sided upper abdominal pain, glomus lumps below the rib-side, abdominal area hardness and fullness, refusing pressure, severe jaundice, scanty, reddish urine, constipation, spirit clouding, deranged speech	A crimson tongue with dry, yellow or yellowish black fur, and a bowstring, rapid or fine, rapid pulse	Clear the constructive, cool the blood, and resolve toxins, free the flow, and precipitate and expel stones, support the righteous and dispel evils, secure yang and stem desertion	For pain only
Qi and blood dual vacuity, phlegm and turbidity mutually binding	Yellowing of the eyes and body which is sometimes worse and sometimes better, dizziness and vertigo, a shiny, greenish, blue facial complexion, fatigue, lassitude of the spirit, lack of strength, disinclination to speak, scanty *qi*, rib-side distention, fullness, oppression, and discomfort or insidious pain which comes and goes, accumulation lumps below the rib-side if severe, reduced food intake	A pale but dark tongue with possible static macules or spots, engorged, distended, tortuous sublingual veins, and a bowstring, fine or bowstring, choppy pulse	Fortify the spleen and dispel dampness, rectify the *qi* and harmonize the blood	GB-24; BL-19; LI-3; ST-36
Qi and *yin* insufficiency	Insidious rib-side pain accompanied by marked fatigue, lack of strength, torpid intake, and abdominal distention after meals in patients typically over 40 years of age, dry mouth with a bitter taste, constipation	A fate, swollen tongue with teeth-marks on its edges, a red tip, cracks in its center, and scanty or peeled fur, and a fine, bowstring, rapid pulse	Supplement *yin* and boost the *qi*, clear heat and eliminate dampness, move the *qi*	Bl-17; BL-18; BL-20; GB-24; GB-34
Roundworm reversal pattern	Intermittent attack of stomach ductal and rib-side pain, chest oppression, irritability, vexatious heat, vomiting after eating and/or vomiting of roundworms, cold hands and feet	A red tongue with peeled, slimy, white fur, and a deep, slippery, bowstring or deep, fine, and bowstring pulse	Warm the viscera and clear heat, drain evils and quiet roundworms	LI-20; ST-4; CV-13; BL-19; CV-12; GB-34

* *Note*. Adapted with permission from [21].

in U.S. community practice, as well as the need to provide as generalizable a treatment regimen as possible, prompted us to expand the provider base. In our group's most recent clinical investigation [23], involvement of several different community-licensed acupuncturists was a crucial aspect of the trial design. Standard community acupuncture practice involves licensed acupuncturists for virtually all patients but published acupuncture data have been exclusively from academic centers. We consider it essential to bring community-licensed acupuncturists "into the tent" for clinical research.

This pilot study was designed to assess acupuncture as therapy for the symptom cluster of sleep disturbances and hot flashes in breast cancer survivors using the objective measurement of symptom response. Virtually all published trials of acupuncture in symptom relief have used questionnaires or surveys to measure subjective responses, simply because objective measurements of most symptoms are lacking, the sole exception is documentation of basal and stimulated salivary flow rates in xerostomia studies. Tools such as wrist actigraphy for sleep disturbance and sternal skin conductance monitors for hot flashes are simple and widely available, and correlate well with subjective reports [24,25].

The trial schema provided a baseline 2-week monitoring of symptoms followed by three acupuncture treatments over 2 weeks, then 4 weeks of follow-up assessment. Patients wore wrist actigraphy continuously over the 8-week period and a sternal skin conductance monitor for 24 consecutive hours once each week. Licensed acupuncturists were allowed to treat whatever points they felt were necessary, corresponding to the patient's clinical presentation.

Ten women enrolled and eight completed the entire treatment regimen. Thirty-eight different acupoints were used for treatment, and a mean of 10 needles was used per session. Although the majority of the points were located on the kidney and large intestine meridians, the top two most frequently used points were LU-7 and SP-6. Two significant patterns of symptom change emerged: a decrease in waking after sleep onset from baseline compared with the end of the trial ($p = 0.05$); and a decrease in number of hot flashes from baseline through acupuncture ($p = 0.02$), with a return to baseline after acupuncture ceased.

We are now in the approval phase of a multisite trial to use acupuncture in relief of fatigue during radiotherapy, specifically in breast cancer survivors who have received chemotherapy. Patients from clinics in five different Indiana cities will be offered enrollment, and community-licensed acupuncturists will provide therapy.

5. Conclusion

The emergence of acupuncture as an accepted treatment for cancer symptoms allows recognition that it may be the only successful therapy in many circumstances:

- A patient with refractory pruritis enjoyed relief for the last days of life following auricular acupuncture.
- A patient with terminal esophageal cancer enjoyed a full night of sleep following support of *Ming Men*.
- Patients with refractory nausea and vomiting despite antiemetics postgastrectomy had relief with the Shen technique [26].
- Patients with postherpetic neuralgia have less pain and require fewer medications.

I am extraordinarily excited by the opportunity presented by having licensed acupuncturists joining our team caring for cancer patients. Academically, we are intrigued by the potential for objective endpoints and measurement to further validate the positive results noted in surveys and questionnaires. In the past 10 years acupuncture has, rightly, become included in major journals, tumor board discussions, and medical staff privileges. The near future promises more success.

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