

Acupuncture (PDQ®)



Last Modified: 10/02/2009

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Effect of Acupuncture on Immune Function

At least seven human studies have evaluated the effect of [acupuncture](#) on [immune system](#) function in patients with [cancer](#) (see [table](#) at end of this section).[1-7] These studies were all conducted in China. Five were reported in English,[1-3,6,7] and two were reported in Chinese with English abstracts.[4,5]

Four [randomized controlled trials](#),[1,2,4,5] a [nonrandomized clinical study](#),[3] and two [case series](#) [6,7] found that acupuncture enhanced or regulated [immune function](#).

The first [randomized controlled trial](#) found that acupuncture treatment enhanced [platelet](#) count and prevented [leukocyte](#) decrease after [radiation therapy](#) or [chemotherapy](#), in comparison with the [control group](#). [1]

A second study involved a group of 40 [postoperative cancer](#) patients, 20 of whom received daily acupuncture treatment and 20 of whom served as a control group. After 3 days, [leukocyte phagocytosis](#) was enhanced in the treated group, compared with the [baseline](#) measurement ($P < .01$); no such enhancement was [observed](#) in the control group.[2]

A third study observed the effect of acupuncture on [interleukin-2 \(IL-2\)](#) and [natural killer \(NK\) cell](#) activity in the [peripheral blood](#) of patients with [malignant tumors](#). The patients were divided into an acupuncture treatment group ($n = 25$), which received 30 minutes of acupuncture daily for 10 days, and a nonacupuncture control group ($n = 20$). The data showed that IL-2 level and NK [cell](#) activity were significantly increased in the acupuncture group, compared with the control group ($P < .01$).[4]

A fourth study observed the effect of acupuncture on T- [lymphocyte](#) subsets (CD_3+ , CD_4+ , and CD_8+), [soluble IL-2 receptor](#) (SIL-2R), and beta- [endorphin](#) (beta-EP) in the [peripheral blood](#) of patients with malignant tumors. The data showed that acupuncture treatment increased the proportion of the CD_3+ and CD_4+ T-lymphocyte subsets, the CD_4+/CD_8+ ratio ($P < .01$), and the level of beta-EP. It decreased the level of SIL-2R ($P < .01$). The investigators suggested that the anticancer effect of acupuncture may be mediated via the mechanism of [immunomodulation](#). [5]

The nonrandomized [clinical](#) study showed that [microwave acupuncture](#) (MAT), a newly developed technique in which a specially designed device attached to a normally inserted [acupuncture needle](#) is used to deliver microwave [radiation](#) to a given point, enhanced the immunologic function of cancer patients. Although there was an increase in [white blood cell](#) count in the MAT group, the change was not significantly different from that seen in the control group under [drug](#) treatment.[3]

In a clinical case series, 28 cancer patients who were treated with [electroacupuncture](#) (EA) while undergoing chemotherapy experienced no declines in [T cells](#) (CD_3+ , CD_4+ , CD_8+) or in NK cell activity, both of which are usually suppressed by chemotherapy.[7] Similar findings were reported in a study comparing EA to the control in patients receiving chemotherapy for [breast](#), [colorectal cancer](#), and [non-Hodgkin lymphoma](#). [8]

In another clinical case series, 48 patients with [leukopenia](#) —including two cancer patients—who were treated with manual acupuncture experienced improvements in leukocyte count, [intracutaneous phytohemagglutinin](#) (PHA), and [immunoglobulin](#) (IgG, IgA, and IgM) levels after 14 daily acupuncture

Table 2. Clinical Studies of Acupuncture: Immune System Function^a

[Enlarge](#)

Reference Citation(s)	Type of Study	Condition Investigated	No. of Patients: Enrolled; Treated; Control ^b	Strongest Benefit Reported ^c	Concurrent Therapy Used (Yes/No/Unknown) ^d	Level of Evidence Score ^e
[1]	RCT	Immune system function and symptoms related to cancer and treatment	76; 38 radiation therapy and chemotherapy plus acupuncture; 38 radiation therapy and chemotherapy alone	Enhanced immune system function, weight gain, <u>symptom relief</u> , and fewer <u>side effects</u> from chemotherapy ^e	No	1iiC
[2]	RCT	Leukocyte activity in cancer patients following <u>surgery</u>	40; 20 <u>standard care</u> plus acupuncture; 20 standard care alone	Leukocyte <u>phagocytic</u> activity enhanced ^f	No	1iiD
[4]	RCT	Changes in blood IL-2 levels and NK cell activity in cancer patients	45; 25 acupuncture; 20 no additional treatment or <u>sham</u>	Enhanced immune system function: Increases in IL-2 levels and NK cell activity ^g	No	1iiD
[5]	RCT	Changes in blood T-cell populations and SIL-2R and beta-endorphin levels in cancer patients	40; 20 acupuncture; 20 no additional treatment or sham	Enhanced immune system function: increases in CD3+ cells, CD4+ cells, the CD4+: CD8+ cell ratio, and beta-endorphin levels; decrease in SIL-2R levels ^h	No	1iiD
[3]	Nonrandomized controlled trial	Leukopenia after radiation therapy	49; 20 MAT alone; 29 drugs alone	Increase in average WBC count for both groups ⁱ	No	2D
[6]	<u>Nonconsecutive case series</u>	Leukopenia, caused by cancer, radiation therapy, or chemotherapy, <u>rheumatoid arthritis</u> ; and other causes	48; 48 acupuncture (2 with cancer); none	Increase in leukocyte levels; improvement in immune system function as measured by IgG, IgA, and IgM levels; PHA-induced lymphocyte proliferative <u>responses</u> ; and complement <u>protein</u> C3 levels ^j	Unknown	3iD
[7]	Nonconsecutive case series	T-cell levels and NK cell activity in patients treated with chemotherapy	28; 28 EA; none	No decline in T-cell levels or NK cell activity after chemotherapy ^k	No	3iiD
[8]	Nonconsecutive case series	T-cell levels and NK cell activity in patients treated with chemotherapy	139; 48 EA; 49	No decline in T-cell levels, NK cell activity, humoral <u>immunity</u> , or leukocyte count after chemotherapy	Unknown	3iiiD

EA = electroacupuncture; IgA, IgG, and IgM = immunoglobulins; IL-2 = interleukin-2; MAT = microwave acupuncture; NK = natural killer cell; No. = number; PHA = phytohemagglutinin; RCT = randomized controlled trial; SIL-2R = soluble IL-2 receptor; WBC = white blood cell.

^a See text and the [NCI Dictionary](#) for additional information and definition of terms.

^b Strongest evidence reported that the treatment under study has activity or improves the well-being of cancer patients.

^c For information about levels of evidence analysis and an explanation of the level of evidence scores, see [Levels of Evidence for Human Studies of Cancer Complementary and Alternative Medicine](#).

^d Concurrent therapy for symptoms treated (not cancer).

^e $P < .05$, acupuncture treatment versus control.

^f $P < .01$, daily acupuncture treatment versus control.

^g $P < .01$, daily acupuncture treatment versus control.

^h $P < .01$, postacupuncture treatment versus baseline levels.

ⁱ $P > .05$, MAT versus drug treatment controls. Drugs: vitamin B4, leucogen, butylalcohol, unspecified Chinese herbs, interferon, transfer factor (a dietary supplement purported to enhance the immune system, available through distributors on the Web), anion inhalation. An unknown drug, NDA, was also given to patients in the drug group.

^j $P = .05$, postacupuncture treatment versus baseline levels.

^k $P = .05$, no significant declines postacupuncture treatment versus baseline levels.

Effect of Acupuncture on Cancer Pain

Eight clinical studies of acupuncture as a treatment for cancer-related pain have been reported in the English language (see [table](#) at end of this section).^[9-16] Three studies were randomized controlled clinical trials, with two studies conducted in China and one in France.^[10, 11, 16] Two studies were nonrandomized clinical trials conducted in France and Germany.^[12, 13] Three studies were case series, with one each from England, Hong Kong, and the United States.^[9, 14, 15]

One randomized trial compared classical Chinese acupuncture; [acupuncture point injection with freeze-dried human transfer factor](#); and conventional [analgesic](#) treatment in patients with [stomach cancer](#) pain.^[10] The investigators reported an equivalent analgesic effect among the three groups observed after 2 months of treatment; however, the conventionally treated group experienced significantly superior [analgesia](#) compared with both acupuncture treatment groups during the first 10 days of treatment. The researchers reported that the patients in both acupuncture treatment groups also experienced improved [quality of life](#) and a decrease in the side effects of chemotherapy, in addition to analgesia.

The second [randomized clinical trial](#) evaluated the effect of various combinations of [auricular](#) acupuncture, Chinese herbs, and [epidural morphine](#) to relieve postoperative pain in 16 patients with [liver cancer](#).^[11] The study design was complicated and had a very small sample size (n = 2 per group). On the basis of the [Visual Analog Scale](#) (VAS) (0–100 mm), all of the combination treatment groups experienced better analgesia than did a [placebo](#)-treated control group.

A nonrandomized single-arm observational clinical study evaluated the effect of auricular acupuncture in 20 cancer patients who were still experiencing pain after treatment with analgesics.^[12] While patients continued their analgesic medication, auricular acupuncture needles were embedded in ear [acupuncture points](#) chosen according to clinical symptoms and electrodermal [response](#) and were left in place until they fell out. In some cases, the needles remained in place for 35 days, while in others they fell out after 5 days. Pain intensity was measured by a [nurse](#) on the VAS on day 0 and day 60, and the data were analyzed using a *t* test. The results showed that pain intensity decreased or remained stable after auricular acupuncture in all patients, with a significant average pain intensity decrease of 33 mm ($P < .001$). The same investigators later reported a larger (n = 90) randomized blinded controlled trial in which cancer pain intensity was significantly decreased (by 36%) in an auricular acupuncture treatment group, in comparison with [control groups](#) (acupuncture at placebo points or auricular seeds placed at placebo points) after 2 months of treatment ($P < .001$).^[16]

Another nonrandomized study investigated the effect of acupuncture in postoperative pain management and arm movement in [breast cancer](#) patients after surgical [excision](#) of the cancer and [axillary lymph node dissection](#).^[13] Forty-eight patients were treated with acupuncture on the third, fifth, and seventh days after surgery and on the day of patient discharge. Compared with a control group of 32 patients who had the same surgery but did not receive acupuncture treatment, the acupuncture group had significant pain relief during arm movement on the fifth and seventh days following surgery and at the time of discharge. The range of arm motion also increased significantly in the treatment group, compared with the control group, during the postoperative period ($P < .001$). The authors concluded that acupuncture point selection based on the state of the patient and obtaining a [needling "de qi" sensation](#) were important to achieving an effective acupuncture treatment.

In a case series involving 183 cancer patients who were treated with acupuncture for cancer-related pain, 52% were significantly helped (*P* value not stated).^[14] Multiple treatments at intervals of 1 to 4 weeks were nearly always necessary for significant and long-term pain control.

In another case series, 29 patients with malignant tumors who developed pain received EA treatment.^[15] All experienced various degrees of pain relief, and 25 out of 29 were able to either reduce or eliminate their analgesic requirements following multiple EA treatments.

A third case series produced similar results.^[9] After auricular EA treatment, five patients with cancer pain reported improvements.

Although most of these studies were positive and demonstrated the effectiveness of acupuncture in cancer pain control, the findings have limited significance because of [methodologic](#) weaknesses such as small sample sizes, an absence of patient blinding to treatment in most cases, varying acupuncture treatment regimens, a lack of standard [outcome](#) measurements, and an absence of adequate [randomization](#). Further investigations into the effects of acupuncture on cancer pain using rigorous scientific methodology are warranted.

Table 3. Clinical Studies of Acupuncture: Cancer-Related Pain^a

[Enlarge](#)

Reference Citation(s)	Type of Study	Condition Treated	No. of Patients: Enrolled; Treated; Control ^b	Strongest Benefit Reported ^c	Concurrent Therapy Used (Yes/No/Unknown) ^d	Level of Evidence Score ^e

[10]	RCT	<u>Stomach</u> cancer pain	48; 16 acupuncture and 16 acupuncture point injection of freeze-dried human transfer factor; 16 conventional analgesics	In long-term treatment, equal or better analgesia than conventional drugs ^f	No	1iiC
[11]	RCT	Postoperative pain in <u>liver</u> cancer patients	16; 12 Chinese herbs, auricular EA, or epidural morphine given alone or in combination; 4 placebo controls	Combination treatment better than placebo and EA alone, Chinese herbs alone, or epidural morphine alone ^g	Yes (Chinese herbs; epidural morphine)	1iC
[16]	RCT	Cancer pain	90; 28 auricular acupuncture; 51 acupuncture at placebo points in ear or auricular seeds fixed at placebo points with adhesive	Pain intensity decreased by 36% at 2 months ^h	Yes (analgesics and co-analgesics, including <u>tricyclic antidepressants</u> and <u>antiepileptics</u>)	1iiC
[12]	Nonconsecutive case series	Cancer pain	20; 20 auricular acupuncture; none	Average pain intensity decreased by 43%, using VAS (0–100 mm) ⁱ	Yes (analgesics)	3iiiC
[13]	Nonrandomized controlled trial	Local pain and limitation of arm movement after breast cancer surgery and <u>axillary lymph node</u> dissection	80; 48 acupuncture; 32 no acupuncture	Improved postoperative pain; improved range of arm motion ^j	Unknown	2C
[14]	Nonconsecutive case series	Cancer-related pain	183; 183 acupuncture; none	95 (52%) "significantly helped"	Yes (analgesics)	3iC
[15]	Nonconsecutive case series	Cancer pain	29; 29 EA; none	Pain reduced; injection of analgesics reduced or no longer required	Yes (analgesics)	3iC
[9]	Best case series	Cancer pain	5; 5 auricular EA; none	Symptoms improved	Unknown	4

EA = electroacupuncture; No. = number; RCT = randomized controlled trial; VAS = Visual Analog Scale.

^aSee text and the [NCI Dictionary](#) for additional information and definition of terms.

^bNumber of patients treated plus number of patients control may not equal number of patients enrolled; number of patients enrolled equals number of patients initially recruited/considered by the researchers who conducted a study; number of patients treated equals number of enrolled patients who were given the treatment being studied AND for whom results were reported.

^cStrongest evidence reported that the treatment under study has activity or otherwise improves the well-being of cancer patients.

^dConcurrent therapy for symptoms treated (not cancer).

^eFor information about levels of evidence analysis and an explanation of the level of evidence scores, see [Levels of Evidence for Human Studies of Cancer Complementary and Alternative Medicine](#).

^f $P < .05$, acupuncture treatment versus conventional analgesics.

^g $P < .05$, combination of traditional Chinese medicine (acupuncture and Chinese herbs) and epidural morphine versus placebo.

^h $P < .0001$, acupuncture versus placebo.

ⁱ $P < .00001$, day 60 after start of acupuncture treatment versus day 0.

^j $P < .01$, acupuncture treatment versus no acupuncture treatment.

Effect of Acupuncture on Chemotherapy-Induced Nausea and Vomiting

Of all the investigated effects of acupuncture on cancer-related or chemotherapy-related symptoms and disorders, the positive effect of acupuncture on chemotherapy-induced nausea and vomiting (N/V) is the most convincing, as demonstrated by the consistency of the results of a variety of clinical study types, including randomized clinical trials, nonrandomized trials, prospective consecutive case series, and retrospective studies (see [table](#) at end of this section). Consistent with the findings from clinical studies of acupuncture on N/V due to other causes such as postoperative N/V and morning sickness, these studies showed acupuncture to be effective in the treatment of chemotherapy-induced N/V. A well-documented example is discussed below.

A systematic review of the effect of acupuncture on N/V describes five clinical trials of chemotherapy-induced N/V, conducted by different investigators on different groups of patients and using different forms of acupuncture point stimulation.[17] All five trials yielded positive results. These consistent results support the claim that acupuncture is useful for treating chemotherapy-induced N/V. More recently, the efficacy of acupuncture point stimulation for chemotherapy-induced N/V has been reviewed, suggesting that acupuncture is more effective for acute vomiting than for acute or chronic nausea.[18]

A number of clinical studies of the effect of acupuncture on chemotherapy-induced N/V have been reported.[19-31]

A randomized placebo-controlled clinical trial investigated the effect of EA on chemotherapy-induced emesis in 104 patients with breast cancer who were undergoing a highly emetogenic chemotherapy regimen. [21] The patients were randomly assigned to receive low-frequency EA at classic antiemetic acupuncture points once daily for 5 days (n = 37), minimal needling at control points with mock EA on the same schedule (n = 33), or no adjunct needling (n = 34). All patients received concurrent antiemetic drugs (prochlorperazine, lorazepam, and diphenhydramine) and high-dose chemotherapy (cyclophosphamide, cisplatin, and carmustine). The main outcome measures were the total number of emesis episodes and the proportion of emesis-free days occurring during the 5-day study period. The data revealed fewer emesis episodes in the EA treatment group compared with those in the minimal needling and drug-only control groups ($P < .001$), although differences among the groups were not significant during the 9-day follow-up period ($P = .18$). These findings are consistent with results reported by other investigators.[19,20,22,23,25,26,29] However, another published study showed that acupuncture had no additional effect on the prevention of acute N/V in patients receiving high- dose chemotherapy when combined with ondansetron. [31] One study suggested decreased delayed nausea from acupressure at point p6 compared with sham acupressure.[32]

Table 4. Clinical Studies of Acupuncture: Nausea and Vomiting^a

[Enlarge](#)

Reference Citation(s)	Type of Study	Condition Treated	No. of Patients: Enrolled; Treated; Control ^b	Strongest Benefit Reported ^c	Concurrent Therapy ^d	Level of Evidence Score ^e
[21]	RCT	N/V related to high-dose chemotherapy for breast cancer	104; 37; 67 (sham EA or no EA)	Less N/V in EA group ^f	Yes (prochlorperazine, lorazepam, and diphenhydramine)	1iiC
[19,25,26]	RCT	N/V from chemotherapy	10; 10 (EA); 10 sham EA (crossover study)	Significantly less N/V than control ^g	Yes (metoclopramide)	1iiC
[22]	RCT	N/V from chemotherapy	100 (these patients were used more than once because of nature of crossover study); 27 <u>surface electrodes</u> ; 11 rubber electrodes; 14 crossover study; 24 transcutaneous electrical stimulation	75% achieved considerable benefit ^h	Yes (metoclopramide, <u>thiethylperazine</u> , prochlorperazine, cyclizine, lorazepam, and steroid)	1iiC
[29]	RCT	N/V from chemotherapy	16 (the same 16 patients treated twice in a crossover study); 16 ondansetron plus transcutaneous electrical stimulation; 16 cross-over treatment ondansetron only	Symptom-free patient days: 58.8% ⁱ	Yes (ondansetron)	1iiC
[27]	RCT	N/V from chemotherapy	53 enrolled; 38 completed; 38 acupressure; 38 crossover to acupressure at a sham point	55% reduction in N/V ^j	Yes (antiemetics)	1iiC
[31]	RCT	N/V from high-dose chemotherapy	80; 41 acupuncture; 39 noninvasive placebo acupuncture	None ^k	Yes (ondansetron)	1iiC
[30]	RCT	N/V from chemotherapy	739; 233 <u>bilateral acupressure bands</u> and 234 <u>transcutaneous electrical stimulation bands</u> ; 233 no bands; 39 not evaluable	Less N/V in treatment groups than in control ^l	Yes (5-HT ₃ receptor <u>antagonist</u> , prochlorperazine, and/or others)	1iiC
[33]	RCT	N/V from chemotherapy	36; 17 acupressure; 19 control	Significantly lower N/V	Yes (antiemetics)	1iiC
[20]	Nonrandomized controlled trial	N/V from chemotherapy	105; EA at P6	63%, complete	Yes (metoclopramide; prednisolone)	2C

				relief, at least 8 h		
[23, 25]	Consecutive case study	N/V from chemotherapy	40; 40 acupressure	8–24 h relief	Yes (not specified)	3iiC
[20]	CT	N/V from chemotherapy	43; 38 10 Hz EA; 5 sham (crossover subset)	8–10 h relief; 32 patients had complete relief	Yes (antiemetics)	2C
[28]	CT	N/V from chemotherapy	18; 18 acupressure bands; 18 (crossover study—incorrect placement of acupressure bands)	Effective for N/V	Yes (antiemetics: prochlorperazine, maxalon, and domperidone <u>suppository</u>)	2C
[24]	Nonconsecutive case series	N/V from chemotherapy	26; 26 acupuncture; 51 historical controls—no acupuncture	<u>Mean</u> no. of episodes and duration of N/V reduced	Yes (<u>metoclopramide, dexamethasone, and diphenhydramine</u>)	3iiiC
[19]	Nonconsecutive case series (<u>pilot study</u>)	N/V from chemotherapy	15; 15 EA; none	12 patients—no symptoms for 8 h	Yes (antiemetic: metoclopramide)	3iiiC
[34]	Consecutive, uncontrolled case series	N/V from chemotherapy mean no. of emesis 7–3	27; no controls	10 patients had complete response to EA and had no vomiting	Yes (antiemetics: either ondansetron 8 mg or granisetron 3 mg)	3iiiC
[32]	RCT	N/V from moderate to highly emetogenic chemotherapy	160; 96; 54	Decreased delayed N/V for acupressure	Yes (anthracycline and cyclophosphamide and an antiemetic)	1iiC

CT = controlled trial; EA = electroacupuncture; h = hour; No. = number; N/V = nausea and vomiting; RCT = randomized controlled trial.

^aSee text and the [NCI Dictionary](#) for additional information and definition of terms.

^bNumber of patients treated plus number of patients control may not equal number of patients enrolled; number of patients enrolled equals number of patients initially considered by the researcher who conducted a study; number of patients treated equals number of enrolled patients who were given the treatment being studied AND for whom results were reported; historical control subjects are not included in number of patients enrolled.

^cStrongest evidence reported that the treatment under study has activity or improves the well-being of cancer patients.

^dConcurrent therapy for symptoms treated (not cancer).

^eFor information about levels of evidence analysis and an explanation of the level of evidence scores, see [Levels of Evidence for Human Studies of Cancer Complementary and Alternative Medicine](#).

^f $P < .001$, low-frequency EA at classical antiemetic acupuncture points daily versus minimal needling at control points with sham EA versus no adjunct needling.

^g $P < .001$, EA versus sham EA.

^h $P < .001$, surface electrodes versus rubber electrodes.

ⁱ $P < .00059$.

^j $P < .02$, acupressure versus acupressure at a sham point.

^k $P < .05$, acupuncture versus noninvasive placebo acupuncture.

^l $P < .05$, acupressure and acustimulation wrist bands versus no treatment.

Effect of Acupuncture on Cancer and Cancer Treatment-Related Side Effects

Nine studies have reported on the effects of acupuncture on cancer or other cancer treatment–related symptoms, including weight loss, cough, thoracodynia, hemoptysis, fever, anxiety, depression, night sweats, hot flashes, xerostomia, rectitis, dysphonia, esophageal obstruction, and postoperative lymphedema. [1, 9, 35–41] Four studies were from China, [1, 37–39] one from Italy, [36] one from Japan, [40] and three from the United States. [9, 35, 41] Most were case studies or case series. [9, 37–39] one was a retrospective survey study, [35] one was a phase I pilot study, [36] and two were randomized clinical trials. [1, 41] The findings from these studies are summarized in a table at the end of this section.

In a randomized clinical trial, [1] 76 patients with various types of cancer, including 38 with esophageal cancer, 24 with stomach cancer, and 14 with lung cancer, were randomly assigned to two groups (n = 38 per group). The treatment group received acupuncture in combination with radiation therapy or chemotherapy, and the control group was treated with radiation therapy or chemotherapy alone. The data showed that the patients in the acupuncture group gained significantly more body weight than patients in the control group ($P < .001$). The acupuncture group also showed greater improvement than the controls in the symptoms of cough, thoracodynia, hemoptysis, and fever for patients with lung cancer and the

symptoms of chest pain, mucus vomiting, and difficulty in swallowing for patients with esophageal cancer. In addition, the acupuncture group suffered fewer side effects (poor appetite, N/V, dizziness, or fatigue) from radiation therapy or chemotherapy than the control group. However, no statistical analysis was performed on these data. A randomized controlled trial of 138 patients treated with acupuncture plus massage versus usual care showed decreased pain ($P = .05$) and decrease in depressive mood ($P = .003$) in postoperative cancer patients.[42] A small randomized controlled trial of EA compared with hormone therapy in women with breast cancer suggested a prolonged effect of EA on hot flushes after 24 months. Seven of 19 women initially randomly assigned to EA had 2.1 flushes in 24 hours compared with a baseline of 9.6 flushes in 24 hours.[43]

In a randomized controlled trial, 47 cancer patients with moderate to severe fatigue were randomly assigned to one of three groups. One group received six 20-minute sessions of acupuncture ($n = 15$), one group was instructed to use acupressure ($n = 16$), and the third group, the sham acupressure group ($n = 16$), was taught to apply pressure in three points unrelated to true acupressure. All three groups continued with the same technique for 2 weeks. The study concluded acupuncture was a more effective method than acupressure or sham acupressure.[44]

The phase I pilot study evaluated the effect of acupuncture on tamoxifen -induced menopause symptoms.[36] Fifteen patients with breast cancer who were taking tamoxifen were treated with acupuncture weekly for 3 months. The Greene Menopause Index was used for outcome assessments at baseline before treatment and at 1, 3, and 6 months. The results showed that anxiety, depression, and somatic and vasomotor symptoms, but not libido, were significantly improved in comparison with baseline ($P < .001$). A pilot study of acupuncture for joint symptoms related to adjuvant aromatase inhibitor therapy was performed in postmenopausal breast cancer patients. Acupuncture reduced all related joint symptoms and improved functional ability; however, there was no control or blinding with this study.[45] A retrospective evaluation of 194 patients with predominantly breast or prostate cancer and experiencing vasomotor symptoms found long-term relief of vasomotor symptoms associated with acupuncture and self-acupuncture. The authors suggested that overall treatment dose may be more important than point location, but favored SP6.[46]

The retrospective survey study involved patients of an oncology clinic who were offered acupuncture treatment for potential palliation of symptoms.[35] Among 89 patients treated with acupuncture, 79 responded to a telephone questionnaire survey. The data indicated that the major reasons for referral included pain (53%), xerostomia (32%), hot flashes (6%), and nausea/loss of appetite (6%). Sixty percent of the patients showed at least 30% improvement in their symptoms, and about one-third had no change in the severity of symptoms. Patients were not questioned regarding acupuncture treatment expectations.

Several case series reports describe clinically observed improvement of symptoms following acupuncture treatment.[9, 37-39, 47-49] These symptoms included cancer therapy–induced night sweats, hot flashes, rectitis, xerostomia, dysphonia, cancer-related esophageal obstruction, and postoperative lymphedema in patients following intrapelvic lymph node dissection for malignant gynecologic tumors.

Table 5. Clinical Studies of Acupuncture: For Other Cancer-Related or Cancer Treatment–Related Symptoms^a

[Enlarge](#)

Reference Citation(s)	Type of Study	Condition Treated	No. of Patients: Enrolled; Treated; Control ^b	Strongest Benefit Reported ^c	Concurrent Therapy (Yes/No/ Unknown) ^d	Level of Evidence Score ^e
[1]	RCT	Symptoms of weight loss, cough, thoracodynia, hemoptysis, fever, and side effects of chemotherapy and radiation therapy	76; 38 acupuncture; 38 no acupuncture	Weight gain, symptom relief, fewer side effects ^f	No	1iiC
[36]	Phase I pilot study	Menopausal symptoms in breast cancer patients treated with tamoxifen	15; 15 acupuncture; none	Anxiety, depression, and somatic and vasomotor symptoms improved ^g	No	3iiiC
[45]	Pilot study	Musculoskeletal pain related to adjuvant aromatase inhibitor therapy	21; 19 acupuncture; none	Reduced severity and increased functional ability	Analgesics(<u>acetaminophen</u> , <u>NSAIDs</u> , or <u>COX-2 inhibitors</u>) and various CAM approaches	3iiiC
[36]	Nonconsecutive case series, surveyed retrospectively	Unspecified symptoms (including pain, xerostomia, hot flashes,	79; 79 traditional Chinese acupuncture, auricular acupuncture,	60% showed at least 30% improvement	Yes (standard medical <u>therapies</u>)	3iiiC

		nausea/loss of appetite) from cancer or cancer treatment	<u>percutaneous nerve stimulation</u> , Korean hand acupuncture, or Japanese scalp acupuncture; none			
[37]	Nonconsecutive case series	Radiation rectitis in women treated for <u>cervical cancer</u>	44; 44 acupuncture; none	73% radiation rectitis <u>cured</u> ; no blood or mucus for 15 days	No	3iiiC
[40]	Nonconsecutive case series	Postoperative lower extremity lymphedema in women treated for gynecologic tumors	24; 24 acupuncture and <u>moxibustion</u> ; none	<u>Edema</u> prevented or markedly reduced	Unknown	3iiiC
[9]	Nonconsecutive case series	Xerostomia after radiation therapy in patients with cancer	13; 13 acupuncture; none	Symptoms improved	Yes (not specified)	3iiiC
[9]	Nonconsecutive case series	Night sweats, hot flashes in patients with cancer	6; 6 acupuncture; none	Symptoms improved	Yes (not specified)	3iiiC
[38]	<u>Case report</u>	Dysphonia after radiation therapy	1; 1 acupuncture; none	Voice recovered	Unknown	Not applicable
[39]	Case report	Esophageal obstruction in patients with esophageal cancer	2; 2 acupuncture; none	Obstruction relieved and normal <u>bowel</u> movements restored	Yes (not specified)	Not applicable
[46]	Nonconsecutive case series	Vasomotor symptoms for breast and prostate cancer	194; 194; none	79% showed 50% or greater reduction in hot flashes	none	3iiiC
[42]	RCT	Pain/depression	138; 93 acupuncture and massage; 45 usual care	Increased pain relief/decreased depression	Yes (usual care)	1iiC
[41]	RCT	Hot flashes in breast cancer patients treated with tamoxifen and aromatase inhibitors	72; 42; 30	Reduction of hot flashes but no statistical difference between acupuncture and sham treatment	Yes; SSRIs	1iiC
[44]	RCT	Cancer-related fatigue	47; 31; 16	Improved fatigue levels	None	1iiC
[43]	RCT	Hot flushes	45; 27 EA; 18 hormone therapy	Vasomotor symptoms improved	Unknown	1iiC

EA = electroacupuncture; No. = number; RCT = randomized controlled trial; SSRIs = selective serotonin reuptake inhibitors.

^aSee text and the [NCI Dictionary](#) for additional information and definition of terms.

^bNumber of patients treated plus number of patients control may not equal number of patients enrolled; number of patients enrolled equals number of patients initially considered by the researcher who conducted a study; number of patients treated equals number of enrolled patients who were given the treatment being studied AND for whom results were reported.

^cStrongest evidence reported that the treatment under study has anticancer activity or otherwise improves the well-being of cancer patients.

^dConcurrent therapy for symptoms treated (not cancer).

^eFor information about levels of evidence analysis and an explanation of the level of evidence scores, see [Levels of Evidence for Human Studies of Cancer Complementary and Alternative Medicine](#).

^f $P < .001$, versus baseline.

^g $P < .001$, versus baseline.

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