Preliminary effectiveness of Auricular Point Acupressure on Chemotherapy-Induced Peripheral Neuropathy

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Introduction

- Chemotherapy-induced peripheral neuropathy (CIPN)—numbness, burning and stunning pain distributed in hands and feet—is a major challenge among cancer patients.
- Even after completion of chemotherapy, CIPN persists among ~30-40% of cancer patients, which can negatively impact quality of life
- The only drug (duloxetine) better than placebo in a randomized control trial improved pain intensity by 0.72 points on a scale of 0-10,[5] which cannot manage CIPN effectively.
- Half of all patients still experience CIPN 6 years after treatment, with a 1.8-fold increased risk of falls.
- We examined auricular point acupressure (APA)—a non-invasive, non-pharmacological, patient-managed strategy—to reduce CIPN. APA involves needleless acupuncture-like stimulation on specific ear points. Once the seeds have been taped on the patient's ear by the provider, the patient is able to manage their treatment by themselves at home

Objective

This pilot study aims to examine the effectiveness of auricular point acupressure to reduce CINP and compare the changes in sensory threshold in pain phenotypes.

Method

- A pre- post test pilot study was conducted to examine the feasibility of a 4-week APA intervention. After consent obtained and baseline data were collected, participants waited a month and then completed the same data questionnaire before they started to receive a 4-week APA intervention. Outcomes were assessed after completion of the 4-week APA. After consent obtained and baseline data were collected, participants waited a month and then completed the same data questionnaire before they started to receive a 4-week APA intervention. Outcomes were assessed at pre-intervention, weekly during the intervention and post-intervention, and one month follow-up.
- Primary outcomes (self-reported data) include:(1) Pain, numbness, tingling, and stiffness on the toes, soles, and feet; (2) pain interference, (3) stiffness, (4) physical function…….
- Secondary outcomes include: (1) Sensitivity threshold measured by Semmes-Weinstein Monofilament tests; (2) conditioned pain modulation (cold); and (3) grip strength.
- Fifteen cancer patients with CIPN enrolled. Two dropped out (because they developed new medical conditions).

Intervention

Auricular treatment intervention

- Participants received one treatment each week for 4 weeks APA treatments. Each weekly cycle included one office visit, 5 days of ure to the seeds on all ear pointswearing the tape and seeds on both ears, and 2 days without.
- Participants were instructed to apply press, with the thumb and index finger, three times a day (i.e., morning, noon, and evening) for 3 min each time to manage AIA.

Figure 1: Auricular Diagnosis to Locate Ear Points

1) Using the Zone System

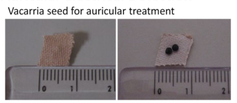
2) Visual Inspection

3) Tenderness Testing

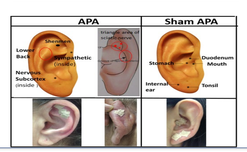
Acupoint finder

4) Auricular Electrical Detection

Vacarria seed for auricular treatment



Auricular Point Acupressure



Result

- Fifteen participants enrolled (average age = 60.27, SD = 7.95). Cancer Diagnosis breast cancer (*n*=9), colon cancer (*n*=2), leukemia (*n*=1), melanoma (*n*=1), non-Hodgkin's lymphoma (*n*=1), endometrial cancer (*n*=1).
- After 4 weeks of APA intervention, participants reported improvements in physical function (57%), numbness (57%), and tingling (37%), in their finger, wrist and elbow compared to pre-intervention.

Table 1: Symptoms and Physical Function Change

Symptoms		Study visit (Mean ±SD)				Change (T5-T1)		Change (T6-T1)	
		Control (T0)	Pre (T1)	Post (T5)	1-M FU (T6)[†]	%	Effect Size	%	Effect Size
Pain	Fingers	4.54±3.46	4.54±3.46	2.31±2.72	1.90±2.23*	-49	-0.64	-58	-0.76
	Wrists	3.23±3.09	3.23±3.09	1.77±3.17	1.60±3.50	-45	-0.47	-50	-0.53
	Elbows	2.77±4.05	2.77±4.05	1.00±2.00	0.50±1.58	-64	-0.44	-82	-0.56
	Toes	6.46±3.57	6.46±3.57	3.46±3.64	3.40±3.53*	-46	-0.84	-47	-0.86
	Soles	4.92±3.66	4.92±3.66	1.46±2.18	2.00±2.40*	-70	-0.95	-59	-0.80
	Feet	5.85±3.78	5.85±3.78	2.54±2.82	3.10±3.00	-57	-0.88	-47	-0.73
	Ankles	3.23±3.96	3.46±4.16	1.23±2.62	0.70±1.89	-64	-0.54	-80	-0.66
Numbness	Fingers	4.85±3.34	5.38±3.15	2.31±2.29	3.10±2.51*	-57	-0.97	-42	-0.72
	Wrists	2.00±3.44	1.92±3.48	1.15±2.82	1.70±3.65	-40	-0.22	-11	-0.06
	Elbows	1.08±2.50	1.08±2.50	0.38±0.96	0.60±1.90	-65	-0.28	-44	-0.19
	Toes	6.08±3.43	6.08±3.43	3.08±2.93	3.50±3.27*	-49	-0.87	-42	-0.75
	Soles	4.23±3.94	4.23±3.94	2.38±2.73	2.90±3.35	-44	-0.47	-31	-0.34
	Feet	5.46±3.73	5.46±3.73	3.00±2.86	3.20±3.26	-45	-0.66	-41	-0.61
	Ankles	2.38±3.38	2.77±3.75	0.77±1.36	0.90±2.23	-72	-0.53	-68	-0.50

Figure 2: Mean "worse" pain, numbness, tingling and stiffness intensity scores change over time in lower extremities

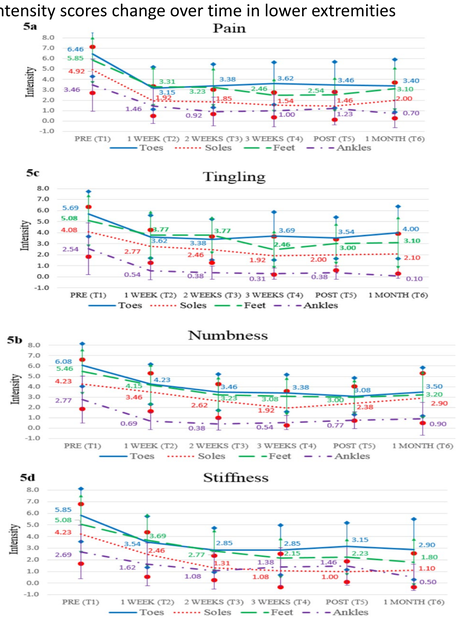
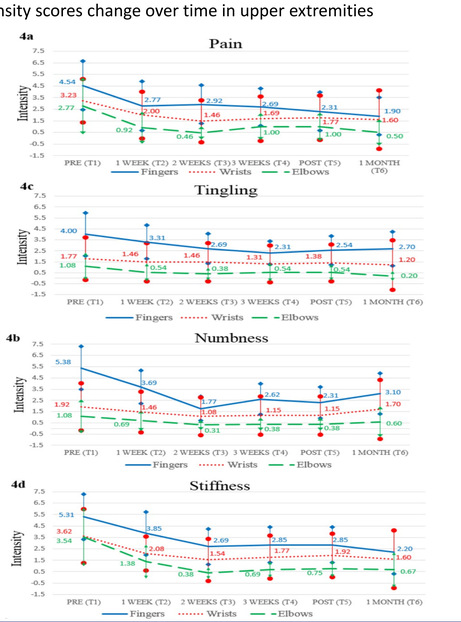


Figure 1: Mean "worse" pain, numbness, tingling and stiffness intensity scores change over time in upper extremities



Findings

- The mean percentage score changes for pain interference with functions were 57% at post treatment (T5) and 66% at 1month follow up.
- Western Ontario and McMaster Universities Osteoarthritis (WOMAC) showed 36% improvement in upper and lower extremities.
- After the 4-week APA, neurotoxicity decreased 14% at post APA and decreased 19% at the 1-month follow-up.
- A perception of treatment efficacy was observed in 60% of participants after the 4-week APA treatment.

Conclusion

- Preliminarily support the effectiveness of APA on the CIPN related symptoms.
- APA may provide an inexpensive and effective complementary approach for the management of CIPN.
- Future studies to confirm these results with an increased sample size and examination of underlying physiological mechanism are warranted.

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