Preventing Chemotherapy-Induced Peripheral Neuropathy with Acupuncture: Results of a Pooled Analysis of Three Parallel Randomized Trials

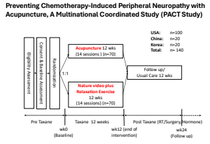
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Background:

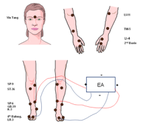
- **Chemotherapy-induced peripheral neuropathy (CIPN)** is a frequent, dose-limiting side effect of taxane chemotherapy that impairs quality of life and may require treatment modification. CIPN affects up to 70% of patients receiving taxanes and often persists long after chemotherapy
- **Acupuncture** is recommended by ASCO/SIO guidelines for treatment of established CIPN, but its ***preventive*** potential during chemotherapy remains uncertain.
- **The PACT pooled analysis** combines data from three international randomized trials (U.S., Korea, China) to assess whether early acupuncture can prevent or reduce the onset of CIPN during taxane therapy.

Methods:



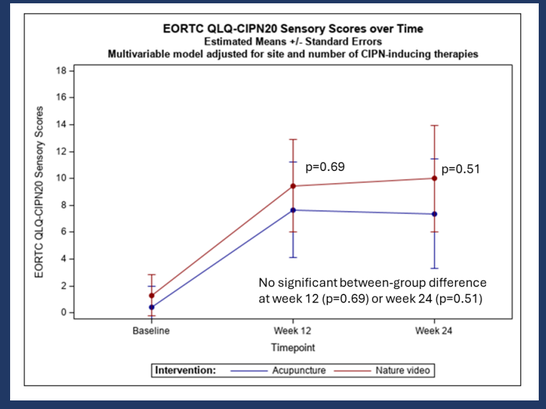


- **Parallel randomized trials** were conducted at three sites: Dana-Farber Cancer Institute, USA; Jiangsu Hospital of Traditional Chinese Medicine, China; and Daegu Catholic University Medical Center, Republic of Korea.
- **Eligibility:** Early-stage (Stage I–III) breast cancer patients scheduled to receive taxane-based chemotherapy, **without preexisting peripheral neuropathy** by PRO-CTCAE screening.
- **Measures:** Patient-reported outcomes including the **EORTC CIPN-20 sensory subscale** (primary endpoint), **PRO-CTCAE neuropathy items**, **EORTC QLQ-C30**, and **Numerical Rating Scale (NRS) of pain**, assessed at baseline, week 12, and week 24.
- **Interventions:** Participants were randomized 1:1 to receive **acupuncture** (14 sessions over 12 weeks) or **nature video with relaxation exercise** (attention-matched control) during taxane chemotherapy, followed by 12 weeks of usual-care observation.
- **Analyses:** Individual patient data from three trials were pooled and analyzed using longitudinal linear mixed-effects model, stratified by site and chemotherapy schedule (weekly vs. non-weekly). All analysis were intention to treat.



Clinical Trial Registry Numbers: NCT05528263, ChiCTR2200066714, KCT0008470

Conclusions: Acupuncture was safe and well-tolerated but did not significantly reduce the risk or severity of CIPN when compared to the nature video control in this pooled cohort. Findings highlight the challenge of identifying effective CIPN prevention strategies.



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Funding Support: Ministry of Health & Welfare, Republic of Korea (Grant number: HI20C1753)

Results:

- Of 129 patients who consented, 128 were randomized (USA: 88, China: 20, South Korea: 20) and 127 were analyzed (63 acupuncture, 64 control)
- Patients: 58.2% White and 38.6% Asian
- Baseline CIPN-20 sensory scores similar between study arms (Table).
- At week 12, patients in both arms reported a statistically significant increase of mean sensory change score from baseline, with no significant differences between groups (p = 0.69) (Table). At week 24, the changes were similar (Figure).
- Mean sensory subscale change scores did not differ significantly by site (China: 4.77 (1.37), USA: 6.32 (0.88); South Korea: 7.02 (1.33); overall p = 0.31).
- No acupuncture-related serious adverse events were observed.

Baseline Demographic and Characteristics of the Pooled Populations

Category	Subcategory	Pooled Acupuncture (n=63)	Pooled Video Control (n=64)
Age, Median (range)		46.0 (30-80)	49.0 (26-77)
Sex	Female	62	64
	Male	1	0
	Female (%)	98.4	100
Race	Asian	24 (38.1%)	25 (39.1%)
	White	32 (50.8%)	35 (54.7%)
	Black	4 (6.3%)	2 (3.1%)
	Other	3 (4.8%)	2 (3.1%)
TNM Stage	Stage 0/I	11 (17.5%)	11 (17.2%)
	Stage II	30 (47.6%)	28 (43.8%)
	Stage III	7 (11.1%)	12 (18.8%)
	Unknown/Other	15 (23.8%)	13 (20.3%)
HR Status	HER2+ (any HR)	27 (42.9%)	17 (26.6%)
	HR+/HER2-	23 (36.5%)	33 (51.6%)
	TNBC	13 (20.6%)	14 (21.9%)
CIPN Inducers	Docetaxel	31 (49.2%)	27 (42.2%)
	Paclitaxel	16 (25.4%)	21 (32.8%)
	More than one	16 (25.4%)	16 (25%)

Table: Changes on EORTC CIPN-20 Sensory Subscale by Study Arms

Measurements	Time point	Acupuncture N	Acupuncture Mean (SE)	Contorl N	Contorl Mean (SE)	Difference in Change Scores (Acupuncture vs. Control) Estimate (95%CI)	p-value
EORTC CIPN-20 Sensory subscale (0-100)	Baseline	63	0.20 (0.81)	64	1.07 (0.80)	-0.96 (2.42) (-5.75 to 3.83)	0.69
	Change at Week 12	56	7.20 (1.75)	62	8.16 (1.67)		
	Change at Week 24	55	6.93 (1.91)	59	8.70 (1.84)	-1.77 (2.66) (-7.02 to 3.49)	0.51

Next Steps:

- Further analyses will explore site and adherence factors underlying response variability. Insights will guide more targeted, mechanism-based approaches to CIPN management.