The Clinical and Biochemical Effects of Massage Therapy on Fatigue and Insomnia during Radiation Treatment for Breast Cancer: A Pilot Study

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Background

Many women undergoing radiation therapy for breast cancer experience debilitating fatigue and insomnia with limited treatment options. The management of treatment and cancer-related effects, which is growing in importance as cancer survivors are expected to reach 18 million in the United States by 2022, an increase of nearly 4 million from 2012 (ASCO). In a recent study of 413 participants diagnosed with breast cancer 18.6% exceeded the threshold for clinically significant insomnia and another 31.5 percent had sub-threshold insomnia as measured by the Insomnia Severity Index (ISI) (Desai K, 2013).

Aims and Hypothesis

1. Study the efficacy of Massage Therapy (MT) as intervention for management of fatigue and insomnia.

Hypothesis: Fatigue and Insomnia scores from baseline to end of study will be lower in the treatment group versus the control group.

2. Examine the effect of Massage Therapy on fatigue and insomnia at the biochemical level by measuring pro-inflammatory cytokines. Interleukin-6 (IL6) and C-Reactive protein (CRP).

Hypothesis: Levels of IL6 and CRP will be lower in the treatment group versus the control group.

Methodology

Design: Two-armed, randomized, controlled and partially blinded pilot study

Participants: 29 female patients age ≥ 18 years, diagnosed with breast cancer and undergoing radiation therapy.

Excluded: Stage IV disease, presence of an underlying disease/injury, which is clearly irreversible and anticipated to be fatal within 5 months, long-term (>3 months) steroid medications in the past year, plans to move out of study region within six months of enrollment (except for participants with CRPS who were excluded due to their pain medications in the past year) and received regular (at least twice per month) bodywork over the past six months.

Setting: Midwest Community Hospital Outpatient Cancer Center (Floyd Memorial Hospital and Health Services)

Data Collection


Variables

Fatigue: Fatigue Symptom Inventory (FSI).

Insomnia: Insomnia Severity Index (ISI).

Sleep Quality: Pittsburgh Sleep Quality Index (PSQI).

Inflammation: IL-6 and C-Reactive Protein (CRP).

Depression: Patient Health Questionnaire (PHQ-9).

Lifestyle Events: Social Readjustment Rating Scale (SSRS).

Anemia: CBC.

Concomitant Meds: Medical History.

BMI, Exercise: Health Assessment.

Treatment Group/Intervention: 60 minute full body massage during each week of radiation therapy. Location (massage room in the Cancer Center) and massage therapist were the same for all participants.

Control Group: standard care plus study visit each week of radiation therapy.

Methods

Study Model

Study Design: Randomized controlled pilot study

Intervention: Multiple 30 minute full body massage during each week of radiation therapy.

Baseline to End of Study

Findings

Demographic, life style, disease burden variables were not significantly different between groups. There were no adverse events associated with massage therapy. Outcomes trended as projected with fatigue and insomnia levels lower in treatment group. CRP-Treatment group had greater positive net change i.e. lower levels of IL6 and CRP.

Data Analysis

Data Analysis: Descriptive statistics- frequency and percentages for discrete measures and means, standard deviation, minimum and maximum for continuous measures are produced in entire cohort and in each group. A chi-square test (and Fisher’s exact in case of 2x2) is used to associate categorical characteristics distribution in each group. Paired sample t-tests were run to get the means and levels of significance. To answer the question, “do participants that have both chemotherapy and radiation have higher levels of fatigue, insomnia and inflammation, an independent samples T test was run to compare the means and determine significance. Levene’s test was looked at to determine if equal variances were assumed.

Research Team

Krystal Angove Lynch LCMW; Raphael Botran-Fernandez PhD (Immunologist); Anthony Dragon MD (Radiologist); Susan Waiz MT, Rayna Withers MA (Health Admin) Angela Leonard and Shesh Rai PhD (statisticians), Judy Myers PhD, RN, Primary Investigator

Discussion

Findings support previous studies suggesting the efficacy of massage therapy for management of cancer related fatigue and insomnia. During the end of study interviews, several J et al. participants from the treatment group described their experience as having more energy and better sleep for approx. 3 days following massage. This suggests future studies should focus on the duration of effect and frequency of massage (2x a week instead of 1x a week) during radiation therapy. Collaborative interdisciplinary research is a viable means to fund and conduct small intervention studies in a community based cancer center. Larger, multi-site studies with more diverse sample are needed to explain biochemical effects of massage therapy.

Works Cited