

Imaging-Guided Core-Needle Breast Biopsy: Impact of Meditation and Music Interventions on Patient Anxiety, Pain, and Fatigue

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Abstract

Purpose: To evaluate the impact of guided meditation and music interventions on patient anxiety, pain, and fatigue during imaging-guided breast biopsy.

Methods: After giving informed consent, 121 women needing percutaneous imaging-guided breast biopsy were randomized into three groups: (1) guided meditation; (2) music; (3) standard-care control group. During biopsy, the meditation and music groups listened to an audio-recorded, guided, loving-kindness meditation and relaxing music, respectively; the standard-care control group received supportive dialogue from the biopsy team. Immediately before and after biopsy, participants completed questionnaires measuring anxiety (State-Trait Anxiety Inventory Scale), biopsy pain (Brief Pain Inventory), and fatigue (modified Functional Assessment of Chronic Illness Therapy-Fatigue). After biopsy, participants completed questionnaires assessing radiologist–patient communication (modified Questionnaire on the Quality of Physician–Patient Interaction), demographics, and medical history.

Results: The meditation and music groups reported significantly greater anxiety reduction (P values $< .05$) and reduced fatigue after biopsy than the standard-care control group; the standard-care control group reported increased fatigue after biopsy. The meditation group additionally showed significantly lower pain during biopsy, compared with the music group ($P = .03$). No significant difference in patient-perceived quality of radiologist–patient communication was noted among groups.

Conclusions: Listening to guided meditation significantly lowered biopsy pain during imaging-guided breast biopsy; meditation and music reduced patient anxiety and fatigue without compromising radiologist–patient communication. These simple, inexpensive interventions could improve women’s experiences during core-needle breast biopsy.

Key Words: Breast biopsy, breast cancer, meditation, breast pain, patient anxiety

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INTRODUCTION

Stereotactic- and ultrasound-guided core-needle breast biopsy (CNBB) are minimally invasive methods of diagnosing suspicious breast lesions and have many

advantages compared with surgical biopsies. CNBBs performed in outpatient settings decrease procedure costs [1], minimize delays, and limit use of intravenous sedation and pain medication used to treat pain and

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anxiety, which are commonly reported [2-7]. Patient anxiety may negatively affect patient adherence to follow-up mammography recommendations [8,9] and is cited as a potential harm of screening mammography, influencing the US Preventive Services Task Force to reduce the recommended frequency of mammography screening [10].

Higher patient anxiety is associated with greater CNBB pain [11]; therefore, interventions to reduce anxiety during CNBB may decrease pain as well. Effective pain and anxiety management not only improve patient comfort, but also are vital to CNBB success. Pain and anxiety can result in patient movement, which lowers the diagnostic yield of procedures, particularly during stereotactic biopsies. In addition, pain may influence adherence to future mammography screening recommendations [11,12] and potentially affect practice revenues. A proposed CMS reimbursement plan, which adjusts payments based on patient satisfaction, includes measures of pain and doctor-patient communication in its patient-satisfaction survey [13].

Fatigue refers to the physically taxing nature of medical procedures. Patients may experience mental or physical exhaustion, weakness, reduced capacity for initiating activity, concentration difficulty, and emotional instability [14-16]. Although fatigue commonly affects patients undergoing breast cancer treatment [15,16], the impact of fatigue related to CNBB has not been investigated.

Studies investigating interventions, such as oral anxiolytics, relaxing music, and hypnosis, designed to reduce anxiety and other negative experiences during outpatient biopsies show varying benefits [7,17-20]. Potential limitations of anxiolytics during outpatient CNBB include need for an adult to drive the patient home after sedation, and possible adverse effects from the medication. Hypnosis seems to be effective but requires formal training of medical personnel in administration of the interactive intervention, which could add to initial costs [7]. One alternative that avoids these issues is use of an audio-recorded, meditation-based intervention. Studies show that meditation-based interventions lead to positive psychological and physical health outcomes, such as decreased anxiety, pain, and fatigue [21-24].

This pilot study evaluated the impact of an audio-recorded, guided meditation, on patient anxiety, pain, and fatigue during CNBB, compared with a music intervention and a standard-care control group. The

meditation intervention tested in this study uses an adaptation of loving-kindness meditation (LKM), focusing on developing positive emotions (eg, compassion) toward oneself and others while releasing negative emotions [25,26]. Hutcherson et al [27] demonstrated that a seven-minute LKM protocol increased positive emotions, suggesting that a brief LKM intervention could be effective during the CNBB timeframe. A secondary aim is to evaluate effects of LKM on radiologist-patient communication, as better communication during CNBB is associated with lower patient anxiety [3] and may have a role in reducing pain [11].

METHODS

Participants

From September 2012 through December 2013, a total of 203 women undergoing ultrasound- or stereotactic-guided CNBB were invited to participate in this prospective, HIPAA-compliant, randomized controlled trial approved by institutional review board. Inclusion criteria were that patients: (1) be women ≥ 21 years old; (2) present for CNBB; (3) be able to speak and read English; (4) provide written informed consent (Fig. 1). A total of 138 women completed informed consent (participation rate: 68%); 65 declined, often citing lack of interest (52%) or time (35%). Seventeen participants were excluded from data analyses: CNBB was not completed ($n = 3$), or women with recent cancer diagnoses required second biopsies ($n = 14$). Overall, 121 women were included in this sample.

Procedures

In a room separate from the biopsy team, research personnel obtained informed consent from patients, then acquired blood pressure and heart rate measurements. Participants then completed written prebiopsy questionnaires assessing anxiety, fatigue, and current breast pain; they were randomized into LKM ($n = 41$), music ($n = 40$), and standard-care control ($n = 40$) groups. Randomization was nonsequential and stratified by imaging guidance; stereotactic-guided biopsy patients were randomized separately from ultrasound-guided biopsy patients.

Immediately after positioning on the biopsy table, before breast preparation or compression, patients in the LKM and music groups were given headphones, with either disposable covers for ultrasound-guided biopsies, or disposable ear buds for stereotactic-guided procedures. Volumes were adjusted so that patients could hear

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