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Music Therapy for Symptom Management After Autologous Stem Cell Transplantation: Results From a Randomized Study



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High-dose chemotherapy followed by autologous stem cell transplantation (ASCT) is frequently performed in patients with hematologic malignancies. ASCT can result in significant nausea, pain, and discomfort. Supportive care has improved, and pharmacologic therapies are frequently used, but with limitations. Music has been demonstrated to improve nausea and pain in patients undergoing chemotherapy, but little data are available regarding the effects of music therapy in the transplantation setting. In a prospective study, patients with lymphoma or multiple myeloma undergoing ASCT were randomized to receive either interactive music therapy with a board-certified music therapist or no music therapy. The music therapy arm received 2 music therapy sessions on days +1 and +5. Primary outcomes were perception of pain and nausea measured on a visual analog scale. Secondary outcomes were narcotic pain medication use from day -1 to day +5 and impact of ASCT on patient mood as assessed by Profile of Mood States (POMS) on day +5. Eighty-two patients were enrolled, with 37 in the music therapy arm and 45 in the no music therapy arm. Patients who received MT had slightly increased nausea by day +7 compared with the no music therapy patients. The music therapy and no music therapy patients had similar pain scores; however, the patients who received music therapy used significantly less narcotic pain medication (median, 24 mg versus 73 mg; $P = .038$). Music therapy may be a viable nonpharmacologic method of pain management for patients undergoing ASCT; the music therapy patients required significantly fewer morphine equivalent doses compared with the no music therapy patients. Additional research is needed to better understand the effects of music therapy on patient-perceived symptoms, such as pain and nausea.

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INTRODUCTION

Autologous stem cell transplantation (ASCT) is a standard treatment for patients with multiple myeloma and lymphoma. However, this treatment can be physically and psychologically challenging, with many side effects that can be painful, distressful, and at times difficult to endure [1,2]. Most patients undergoing ASCT experience nausea induced from high-dose chemotherapy. Antiemetic treatment for these symptoms has improved over time, but nausea remains a

significant problem that increases morbidity and leads to decreased quality of life. Antiemetic therapy is also associated with side effects, including sedation, headache, fatigue, and impaired bowel motility. Most patients also experience pain from mucositis and esophagitis. Severe mucositis can cause oral ulceration, dysphagia, and epigastric pain. Narcotic medications for severe mucositis can have side effects, including impaired bowel motility, nausea, vomiting, headache, and sedation. Thus, identifying alternatives to help treat these symptoms would be beneficial to decrease antiemetic and narcotic medication use.

The American Music Therapy Association defines music therapy as “the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who

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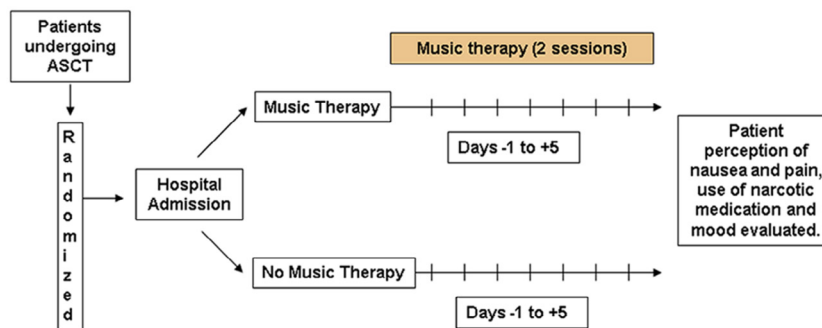


Figure 1. Study design.

has completed an approved music therapy program” [3]. Board-certified music therapists use receptive, recreative, improvisation, and composition methods, frequently incorporating live music to engage patients as fully as possible in music therapy experiences [4]. They address physical, emotional, social, communication, cognitive, sensory, or spiritual goals through a systematic process of referral, assessment, treatment, and evaluation [5].

Although the use of recorded music has proven beneficial in the palliation of such symptoms as nausea and anxiety in patients undergoing chemotherapy [6–8], there is a paucity of data regarding the effects of music therapy in patients undergoing ASCT [9,10]. Thus, we performed a prospective, randomized study to evaluate the effects of music therapy in patients undergoing ASCT, specifically assessing patient-reported symptoms of nausea and pain. We also assessed its effect on narcotic pain medication use.

METHODS

Participants and Recruitment

Between August 2011 and May 2013, all adult patients older than 18 years of age with a diagnosis of multiple myeloma or lymphoma undergoing first ASCT at our institution were approached for the study. Patients who had undergone previous ASCT or had received music therapy were excluded. During the pretransplantation psychosocial assessment, blood and marrow transplantation (BMT) social workers introduced the study to eligible patients and obtained written informed consent from those who wished to participate. Consented patients underwent computer-generated randomization and were assigned to either the experimental arm (music therapy with standard supportive care) or the standard care arm (standard supportive care). Randomization was stratified according to disease (lymphoma, myeloma) and used random block sizes. The randomization list was generated before the study began and was kept in a secured location accessible only to the protocol coordinator.

Transplant Preparative Regimens

Patients with lymphoma received high-dose chemotherapy with busulfan, etoposide, and cyclophosphamide. For busulfan, patients received either 0.8 mg/kg i.v. every 6 hours for 14 doses on days –9 through –6 or 2.8 mg/kg i.v. daily for days –9 through –6. Etoposide was given as a continuous i.v. infusion over 24 to 36 hours at a dose of 60 mg/kg on days –5 and –4. Cyclophosphamide was given with mesna at a dose of 60 mg/kg i.v. on days –3 and –2. Patients with multiple myeloma received high-dose chemotherapy with melphalan 200 mg/m² i.v. on day –2.

Standard Antiemetic Regimens

For patients with lymphoma, the antiemetic regimen consisted of ondansetron 8 mg i.v. daily before chemotherapy from days –9 through day 0, and fosprepitant 150 mg i.v. before cyclophosphamide on day –3. For patients with myeloma, the antiemetic regimen consisted of ondansetron 8 mg i.v. daily on days –2 to day 0 and fosprepitant 150 mg i.v. on day –2 before melphalan.

Study Design

Patients randomized to the experimental group received 2 live music therapy sessions, at least 48 hours apart, from a board-certified music therapist.

The music therapy sessions were held between days –1 and +5, with the first session as close to day +1 as possible (Figure 1). The second session was held at least 48 hours, but no more than 96 hours, later. These time points were chosen based on previous studies demonstrating a greater symptom burden at the time of transplantation (day 0) and toward the time of nadir [1]. Setting our dates from days –1 to +5 allowed for a standard time frame during which patients undergoing ASCT could be evaluated. It also allowed for a finite duration for evaluating narcotic medication use. At our transplantation center, all ASCT recipients are hospitalized from the onset of conditioning through engraftment.

Patients randomized to the standard care arm could choose to listen to recorded music but did not receive interactive music therapy from a board-certified music therapist. After data collection had ended (day +7 onward), music therapy was offered to patients in the standard care group who were interested in participating.

Music Therapy Sessions

Music therapy sessions, facilitated by a board-certified music therapist, were conducted at the patient’s bedside. Each session lasted approximately 30 minutes. The initial session included a brief assessment of the patient’s concerns, including symptoms to help identify music therapy session goals, music background and preferences, and possible music therapy intervention options. Music therapy relies on the therapeutic relationship that develops among the patient, music experiences, and the music therapist [4]. For this reason, and because sessions were individualized and interactive, music therapy interventions were not standardized within the study protocol, to maintain the integrity of the music therapy process. When songs were chosen, these were primarily presented live, sung by the music therapist, who used a keyboard or acoustic guitar for accompaniment, with the patient engaging in the music experience to the extent to which he or she was able. Receptive (eg, music listening, song choices, music and imagery, music-assisted relaxation) and recreative (eg, singing, instrument playing) music therapy methods were used most frequently. Music-assisted relaxation also incorporated live music, with the music therapist simultaneously providing verbal prompts. The patient was encouraged to make as many choices as possible, but if he or she struggled with music choices, the music therapist offered choices based on the patient’s preferences expressed during the assessment.

Measurement Tools

Nausea and pain

No narcotic or antiemetic therapies were administered at least 2 hours before music therapy sessions or study assessments. Advanced practice providers on the inpatient BMT service were not blinded to group assignment and administered nausea and pain assessments. Patients rated nausea and pain on a validated visual analog scale, a 10-cm line with the least nausea or pain at point 0 and the greatest nausea or pain at point 10 [11–13]. Patients marked their level of nausea and pain. Patients in the music therapy arm rated symptoms before and after the first music therapy session on day +1. Patients in the standard care arm also completed symptom assessments on day +1, 30 minutes apart, to simulate the experience of those who received music therapy. Patients in both arms rated their nausea and pain on days +5 and +7 to determine whether the music therapy sessions had any sustained effects.

Mood disturbance

The Profile of Mood States (POMS), a widely used self-rating scale for mood states, was administered by BMT social workers at baseline before admission and on day +5.

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