BRIEF REPORT

Exploring an Integrative Patient-Tailored Complementary Medicine Approach for Chemotherapy-Induced Taste Disorders

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A B S T R A C T

Context: Chemotherapy-induced taste disorder (CITD) is a common adverse effect among patients with cancer, with no effective known treatment.

Objectives: Exploring the impact of a patient-tailored complementary and integrative medicine (CIM) treatment program on CITD-related severity.

Design: Prospective *study on patients' chart*.

Setting: Integrative oncology program operating within the Clalit Healthcare Oncology Service in northern Israel.

Patients: Patients were referred by their oncology healthcare practitioner to a consultation with a CIM-trained integrative physician (IP). A patient-tailored CIM treatment program was designed, addressing quality of life (QOL)-related concerns which were evaluated using the Edmonton symptom assessment scale (ESAS) and the measure yourself concerns and well-being (MYCAW) questionnaires.

Results: A total of 626 patients were referred to the IP consultation, with CITD-related symptoms identified in 43, 34 of them returning for follow-up. The majority of patients treated with CIM reported a reduction in symptom severity ($n = 29$), with only three reporting no change, 2 an "unclear effect" and none a worsening of CITD-related symptoms. Acupuncture and herbal medicine (sage, carob, and wheatgrass juice, as mouthwash or applied to the oral mucosa) were the most frequently CIM modalities used. Assessment was considered optimal for 18 of the 29 patients who reported an improvement in ESAS scores for fatigue, drowsiness and depression. We conclude that a patient-tailored CIM program is a potentially effective and safe therapeutic option for CITD-related symptoms. Further research is needed in order to explore the impact of CIM treatments on taste and appetite-related concerns during chemotherapy.

Keywords: Integrative medicine, Quality of life, Taste, Chemotherapy, Complementary medicine, Supportive care

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INTRODUCTION

Chemotherapy-induced tasted disorders (CITD) are frequently reported by patients with cancer undergoing chemotherapy, with studies showing that between 40% and 84% report reduced or absent sense of taste, as well as altered sensations (e.g., metallic, bitter, burning, and tingling), which can significantly impact quality of life (QOL).[1] CITD reflects aberrant taste thresholds,[2] with patients with chemo- and radiation-induced tasted disorders found to have thicker epithelia and smaller areas of taste pores.[3] Electrogustometric testing has shown that these patients develop hypogeusia and/or hypergeusia in varying nerve fields, with subsequently altered sensations of sweetness, saltiness, sourness, and bitterness.[4] Other chemotherapy-induced toxicities, such as mouth sores, xerostomia, alterations in smell sensation and appetite loss, may also lead to disturbances in taste, with eventual malnutrition and weight loss and fatigue.[5–7] A number of chemotherapeutic agents have been associated with an increased risk for CITD, such as 5-fluorouracil[8] and taxanes.[9] Yet despite its prevalence, CITD remains an under-diagnosed complication of cancer

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treatment,[10] and is rarely discussed by nurses and physicians with their patients.[11]

Clinical research on CITD has proven to be difficult, especially in light of a lack of reliable and validated patient-reported outcome. Accepted study tools, such as the European Organization for Research and Treatment of Cancer (EORTC) Quality of Life questionnaire (QLQ-C30), do not address taste-related concerns.[12] And while the chemotherapy-induced taste alteration scale (CiTAS) was found to have a good reliability and validity, it requires further psychometric testing in order to evaluate its role in supportive cancer care.[13] Researchers have also found a discrepancy between objectively assessed outcomes (e.g., taste strips) and subjective outcomes. PROs are important for assessing subjective clinical outcomes, and can provide important information regarding the patient's experience and interpretation of taste-related symptoms, this within the broader context of an impaired sense of wellbeing and the relationship with other QOL-related concerns.[14] Current treatment strategies for CITD are limited, and not appropriate for many patients.[17] These include changing the daily diet; adding potent herbs and spices to food[15]; and introducing new and varied recipes.[16,17]

In this study, we examined the impact of a complementary/integrative medicine (CIM) treatment program on CITD, within the context of an integrative oncology service.

METHODS

Study Design and Location

The study was prospective *study on patients' charts*. CIM treatments were administered in parallel with standard conventional supportive cancer care, addressing chemotherapy-induced toxicities and patients' individual QOL-related concerns. The study took place between July of 2009 and May 2014 in the outpatient oncology service at the Lin and Zebulon Medical Centers in northern Israel. Patients aged ≥ 18 years with a diagnosis of either localized or metastatic cancer, and who were undergoing chemotherapy (adjuvant, neo-adjuvant, or palliative), were eligible for inclusion.

Outcome Assessment and CIM Treatment Plan

Patients were referred by their oncologist/healthcare practitioner to CIM consultation provided by integrative physician (IP), a physician (M.D.) dually trained in supportive care and CIM. During the initial hour-long IP consultation, QOL-related concerns were discussed and scored using the measure yourself concerns and well-being (MYCAW) and the Edmonton symptom assessment scale (ESAS) study tools.[18,19]

The IP consultation concludes with a jointly-designed CIM treatment plan which addresses the patient's main concerns, while taking into account other factors such as expectations from the therapeutic process; preference for specific treatment modalities, based on prior experience with CIM; and culture-based health beliefs. Most CIM treatment regimens include more than one modality, and are usually comprised of a consultation on the use of nutrition and dietary/herbal supplements, as well as weekly treatments with acupuncture and other manual and mind–body techniques.

Diagnosis and Assessment of Severity for Disturbances in Taste

In order to measure the impact of the CIM treatment process on CITD-related symptoms, the files of patients attending the IP consultation were searched using the keywords "taste" and "dysgeusia." Disorders of taste sensation were identified through the IP history at both intake and at follow-up, as well as from the patient's medical file and study questionnaires. Changes in CITD severity, as measured at the initial and 6-week follow-up IP visits, were assessed based on one or more of the following criteria: (A) changes in MYCAW scores regarding taste-related issues, in those cases where it was listed as a major concern; (B) patient narratives describing a change in taste sensation, as recorded in the follow-up open-ended question in the MYCAW questionnaire; and (C) a physician-reported reference to this outcome in the electronic medical file. The changes in scores given by patients for CITD-related symptoms, from the initial IP visit to the 6–12 week follow-up visit, were divided into four groups of responses: (1) improvement in taste-related concerns; (2) no change in taste-related concerns; (3) an unclear effect of treatment; and (4) a worsening of taste-related concerns.

In the next stage of analysis, the medical files of those patients who had reported an improvement in taste-related concerns were examined. This was done in order to determine whether the reduction in symptom severity was the result of changes in the chemotherapy regimen, or else variations in the timing of the IP visit in relation to the most recent chemotherapy session. Optimal assessment was defined as those cases in which both IP consultations (initial and follow-up) were occurred at the same interval from the initiation of chemotherapy (with <72 h difference between the timing of the two assessments). For patients undergoing palliative treatment, assessment was considered to be optimal if either no chemotherapy was given, or if both IP assessments took place within a 1 week of chemotherapy.

Adverse Events

Any and all adverse events which were related (or believed to be related) to the CIM treatments were monitored and registered throughout the study period. In addition to patient-reported negative effects of treatment, any event which could be attributed to CIM treatments by either the patient, the CIM practitioner, the IP or the referring HCP, were entered into the electronic patient file and protocol registry.

Data Analysis

The data collected were examined using SPSS software program (version **1**8; SPSS Inc., Chicago, IL). Pearson's chi-square and Fisher's exact tests were used to identify variations in demographic data and the prevalence of categorical variables in the two groups of patients (CITD improved vs. CITD of unclear or no benefit).

Ethical Considerations

The study protocol received the approval of the Ethics Review Board (Helsinki Committee) at the Carmel Medical