



Integrative medicine and the oncology patient: options and benefits

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Abstract

Cancer is a major public health problem, and cancer patients and survivors face many physical and emotional challenges after the initial diagnosis, through treatment, and in the post-treatment period. Different integrative medicine (IM) modalities can be used to mitigate some of the physical issues that originate from the cancer itself or the treatment and to promote well-being and emotional health. Here, we discuss how an IM Department can function in a hospital system, particularly with regard to oncology patients, the modalities appropriate for oncology patients, how these modalities can benefit this patient population, and the role of IM in cancer survivorship. A dedicated IM Department that works with oncologists provides support and care for the whole person. These different modalities work together to reduce pain, anxiety, and chemotherapy-induced nausea and peripheral neuropathy, while promoting immune function and improving sleep, range of motion, and an overall sense of well-being. However, each modality has different contraindications for the oncology patient, and proper training is required for safe and effective care. We illustrate how IM can be a valuable component of the care of the oncology patient.

Keywords Integrative medicine · Cancer · Oncology patients · Oncology massage · Acupuncture · Naturopathic oncology

Introduction

Cancer is a major public health problem and is the second leading cause of death in the United States (US). The National Cancer Institute (NCI) estimates that, in 2016, “1,685,210 new cases of cancer will be diagnosed in the US, and 595,690 people will die from the disease” [1]. In addition, the number of cancer survivors is increasing, with nearly 14.5 million patients living with a cancer diagnosis in 2014; this number is expected to reach almost 19 million by 2024 (NCI) [1]. Cancer patients and survivors have unique needs due to the physical and emotional effects of cancer and the different treatments used to combat the disease [2]. Surgery, chemotherapy, and radiation all affect patients in different ways that can be either acute or chronic. In some cases, the effects are permanent, and the patient must learn to live with a “new normal.” Complementary health approaches are frequently used

to augment traditional medicine; when used together with allopathic medical care, these practices are known as integrative medicine (IM). Due to the debilitating nature of their disease and the treatment regimens, oncology patients are particularly likely to use integrative care to manage symptoms and treatment effects such as pain, anxiety, nausea, and limited range of motion [3, 4].

Patients frequently use IM modalities on their own, often without discussing their use with their oncologist. This situation can be dangerous, especially for oncology patients, who are particularly frail and may require modified holistic treatments. Depending on where a patient is in their journey, there are many contraindications for this population. In addition, certain herbs and supplements can counteract chemotherapy drugs, making them less effective. Acknowledging that many patients use IM modalities, some hospital systems have a dedicated IM Department to offer patients safe and appropriate care [5]. Having an IM Department within a hospital system allows for coordinated care for the patient, in which the IM practitioners work together to determine the best treatments for the patients to ensure that the patient does not receive any contraindicated therapy. The IM practitioners have the opportunity to communicate their treatment plan with allopathic oncology providers; this open communication between all care providers allows for optimal patient care. Due to the unique

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needs and concerns of oncology patients, practitioners within the IM Department must be highly trained and qualified to manage and treat oncology patients. Finally, having a dedicated department allows for patients to receive multi-modal treatments that are based on each patient's unique needs.

Here, we discuss how IM can function in a hospital environment, the different modalities appropriate for oncology patients, how these modalities can benefit this patient population, the contraindications for each modality, and the role of IM in cancer survivorship. We illustrate how IM can be a valuable component of the care of the oncology patient.

IM for oncology patients—in a hospital system

Oncology is frequently the initial target population for new IM programs due to the needs of this patient population. The challenging nature of cancer treatment regimens prompts many oncology patients to turn to IM modalities, often without their physician's knowledge or approval. A dedicated IM program protects oncology patients from potentially harmful treatments, while providing effective, appropriate care. At our institution, the IM program started small; oncology patients were offered clinical massage, guided imagery, group meditation, Reiki, yoga, and Tai Chi. These modalities are non-invasive, with minimal contraindications and could therefore be readily integrated into standard oncology care. The IM program rapidly expanded to another campus within the system before expanding to include other patient populations. The IM Department also houses a Medical Division that includes allopathic physicians, and the IM Department is included as a rotation for residents and medical students. This partnership between IM and allopathic care providers creates a system in which patients receive optimal care and support.

Currently, the IM Department at our institution handles approximately 1000 outpatient oncology appointments and an equal number of inpatient oncology sessions every year, across all campuses, in addition to the hundreds of clinical massage sessions that are provided to patients receiving chemotherapy in the infusion laboratory. These oncology-related sessions are a part of the 25,000 yearly appointments that are handled overall in the IM Department. Figure 1 shows the distribution of all outpatient appointments within the IM Department at Beaumont Health in 2015. Clinical massage is the most popular modality, accounting for over 55% of all appointments in the IM Department. Acupuncture is a close second, with 32% of all appointments. The pattern of IM use among oncology patients follows a similar pattern.

Most health care insurance programs in Michigan do not cover complementary health treatments. One notable exception is the employee health plan of our institution, which covers certain IM modalities for specific conditions for staff

and eligible dependents [6]. However, most patients in the IM Department must pay for treatments out of pocket.

IM for oncology patients—options

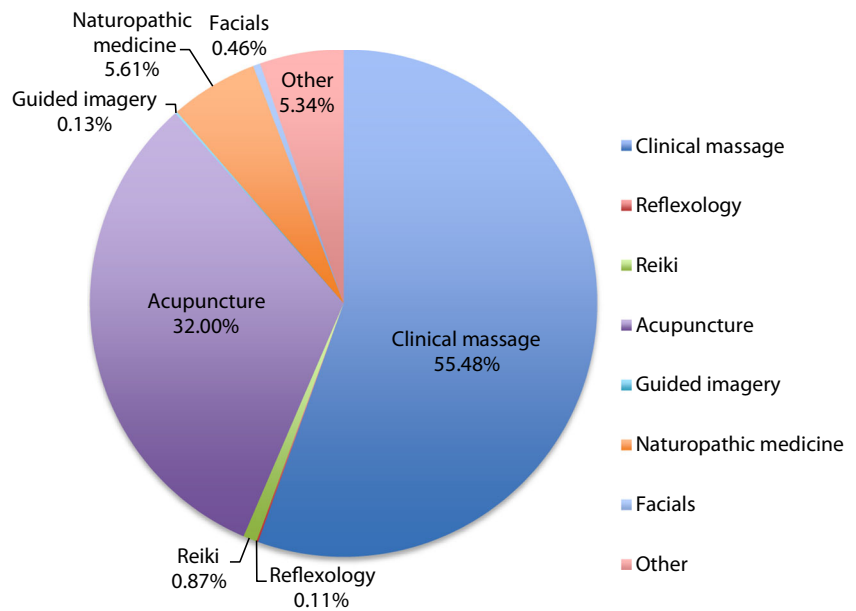
Clinical massage

Massage, the physical manipulation of soft tissues, is an ancient technique [7]. This modality is popular among many groups of people but is becoming a more common treatment modality for cancer patients; in fact, clinical massage is the most popular modality among cancer patients at our institution. Because of its long history and popularity, the benefits of clinical massage have been well documented (for review, see Collinge et al. [8]). For cancer patients, regular massages have been shown to potentially improve quality of life (QoL) by reducing anxiety, depression, and stress, while reducing cancer-associated symptoms such as pain, nausea, and fatigue [8]. Massage has also been shown to promote the immune system [9] and lower blood pressure [9, 10].

In addition to these benefits, certain specialty massage techniques can be used to address concerns specific to oncology patients. For example, clinical massage can be used to potentially improve chemotherapy-induced peripheral neuropathy (CIPN). There is little published research on massage and CIPN [11]; however, a clinical trial to evaluate the effects of massage on CIPN is underway at MD Anderson Cancer Center, and our department has our own clinical trial in progress to formally investigate the benefits of massage in this regard. In addition, as many oncology patients have undergone a mastectomy, a thoracotomy, or a hysterectomy, clinical massage can be used as scar therapy for surgical patients to potentially reduce the impact and appearance of scars and improve range of motion [12, 13], and our department is involved in a collaborative study to evaluate the effects of massage post-mastectomy on range of motion.

Cancer patients who have had axillary lymph nodes removed during a mastectomy are at risk of developing lymphedema. Massage therapists collect a complete patient history before performing any massage, and patients who have had axillary lymph nodes removed are further screened for early symptoms of lymphedema. If the patient presents with signs of lymphedema (swelling, redness, heat, tight skin, or the patient describing a heavy sensation in the affected limb), the affected limb is avoided, and the patient is referred for medical evaluation by the lymphedema clinic. If the patient does not present with such symptoms but is considered at risk for developing lymphedema in the future, a specialty protocol called lymphatic wellness massage can be administered. In this technique, a specially trained massage therapist works with the lymphatic system to promote lymph clearance, thus aiding in the prevention of lymphedema [14].

Fig. 1 Distribution of IM outpatient appointments at Beaumont Health in 2015. This chart shows the use of each type of integrative medicine (IM) modality as a percentage of the total number of IM appointments in 2015. Massage is the most popular IM modality, with acupuncture a close second. The use of IM modalities by oncology patients follows a similar pattern



A specialty technique called constitutional hydrotherapy uses water as a therapy to help reduce discomfort, improve well-being, and promote recovery after treatment. This non-invasive technique improves the quality and the quantity of blood in the tissues, which can lead to the elimination of metabolic waste products. Massage therapists apply warm and cool towels to the patient's trunk to help improve blood and lymph circulation, strengthen the immune system, calm the nervous system, assist the digestive system, and promote the elimination process.

Many contraindications must be considered by a trained massage therapist when providing clinical massage to oncology patients such as the tumor mass itself, fragile bones, edema, damaged skin, and atrophied muscles [8, 15]. In addition, patients at risk of developing lymphedema must be carefully assessed by a trained massage therapist, and the massage therapy must be properly applied to prevent worsening of the condition. These examples indicate why advanced training is important before oncology patients receive treatment. The Society for Oncology Massage (S4OM) supports the safe delivery of massage to people who have been diagnosed with cancer and promotes oncology massage education standards. Programs that meet the education standards can become a recognized provider of oncology massage through S4OM.

Acupuncture

Traditional Chinese medicine (TCM) acupuncture has been used for over 3000 years to treat various disorders and ailments [16]. This technique involves stimulating specific points on the body with needles to achieve an effect [16]. This modality is very popular at our institution among cancer patients, second only to oncology massage. There is strong evidence to support the use of

TCM acupuncture to control cancer pain [17–19] and chemotherapy-induced nausea and vomiting [18–20]. Acupuncture has also been shown to alleviate CIPN and other chemotherapy-related ailments [18, 21] as well as radiation-induced xerostomia (dry mouth) [22–24]. However, acupuncture is contraindicated for cancer patients with a low platelet count or decreased white blood cell count, which is evaluated by the acupuncturist's review of the patient's most recent lab work. For patients with unacceptable values, acupressure and moxibustion (the burning of dried mugwort above specific points on the body) are satisfactory alternatives.

TCM acupuncture can be applied in individual sessions, or community acupuncture sessions can also be used as a more affordable option. These sessions involve treatment of a group of people, and the focus is on general healing and relaxation. The patients are seated in chairs and dressed in loose clothing. The treatments are thus more limited, but can be a good, more affordable option for those patients with less complicated conditions.

Naturopathic oncology

Naturopathic medicine encourages a person's inherent self-healing process using nutrition, herbal medicine, homeopathy, lifestyle counseling, and mind–body medicine to treat the whole person. Naturopathic doctors who specialize in oncology are trained in natural modalities that provide safe and appropriate care to cancer patients and survivors; those who pass board certification in this area are considered Fellows of Naturopathic Oncology. In naturopathic oncology, specific herbs and supplements are used to support the immune system, which is particularly important for the cancer patient. However, certain herbs and supplements can interfere with

the chemotherapy regimen by changing the absorption, metabolism, or excretion of a chemotherapeutic agent, which would adversely impact that chemotherapeutic agent's action [25]. In addition, naturopathic oncology specialists work to reduce cancer therapy-related side effects, such as CIPN, nausea and vomiting, myelosuppression, and gastrointestinal, renal, cardio-, or hepatotoxicity. An initial consultation with an ND typically involves two 1-h appointments; subsequent visits typically last a half hour. These lengthy appointments allow the ND to thoroughly discuss all aspects of the patient's life to obtain a clear picture of the patient as a whole. Finally, all treatment plans should be shared with the patient's oncology team to ensure that all providers are aware of any herbs and supplements that have been recommended.

Reiki

Reiki is an energy therapy in which practitioners place their hands lightly on or just above a person to facilitate energy balance and promote the healing response. Reiki is considered a very low-risk intervention that is contraindicated only when "quieting" is inappropriate, as in patients with certain psychotic disorders. Therefore, this technique is very useful and appropriate for oncology patients, especially those with a low tolerance for touch or pressure. Further studies on the effects of Reiki are required, but Reiki has been shown to induce the parasympathetic response and may reduce pain and anxiety [26, 27] and improve chemotherapy-induced nausea and vomiting [28]. Reiki may also increase relaxation and improve patient QoL and sleep.

Facials and skin care treatments

Cancer patients frequently have damaged or compromised skin, which can lead to not only a change in appearance (negatively affecting self-esteem and QoL) but may compromise skin function with an increased risk of infection or water loss. Formal studies are required, but skin care may help heal skin that has been damaged by chemotherapy or radiation and detoxify after the completion of cancer treatment. In addition, facials can improve a patient's overall sense of well-being and reduce stress.

Because cancer patients also have fragile skin, care must be taken to ensure that the treatment is safe for this patient population. Facials are contraindicated for patients who are receiving radiation as treatment for head and neck cancer, and heat should not be applied to patients with broken skin or those who have had lymph nodes removed secondary to head and neck cancers. Highly trained oncology aestheticians use only gentle treatments and high-quality products, with special attention paid to the ingredients, avoiding products with soy or parabens. For example, heat and pressure must be avoided or carefully applied in moderation to avoid further damage to the

skin, and only organic products should be used to avoid introducing additional toxins through the skin.

Guided imagery

Guided imagery is a mind–body complementary health therapy. In guided imagery, a facilitator guides a person's thoughts and imagination toward specific images to accomplish a specific goal or outcome [29]. Guided imagery is based on the understanding that the mind and body are connected, and the mind can influence the body [29]. This technique is particularly suited to oncology patients, as it is non-invasive and does not involve physical contact. There are no contraindications for the use of guided imagery, although the technique should be used with caution in patients with severe psychotic or personality disorders. Guided imagery sessions can be facilitated through the use of a recording; however, individualized sessions in person with a facilitator are recommended, as the script used can be tailored to the individual's life circumstances and goals.

Guided imagery has been shown to potentially reduce stress, anxiety, and pain and may improve a person's overall sense of well-being [19, 29, 30]. In addition, guided imagery may help control chemotherapy-induced nausea and vomiting [30, 31]. We have previously shown that patients in the progressive care unit who listened to a guided imagery recording report reductions in pain ($p = 0.004$) and anxiety ($p < 0.001$) [32]. Furthermore, we have shown that the regular use of guided imagery may reduce pain ($p = 0.027$) and certain symptoms (episodes of urgency; $p = 0.02$) in women with interstitial cystitis [33].

Guided imagery can be made available to inpatients (via recordings through an in-house channel on the television or a link to internet-based platforms) and outpatients (via one-on-one, personalized sessions). CDs with generalized scripts can also be used by patients. These recordings typically focus on reducing negative aspects, such as stress and anxiety, insomnia, pain, test-taking anxiety, or smoking cessation, or on increasing desired traits, such as a sense of calm and well-being. Such recordings are useful because patients can listen to them multiple times at their convenience. However, private, individualized sessions can provide a more powerful experience.

Reflexology

In reflexology, pressure is applied to specific points on the patient's hands and feet to promote healing and relaxation. With gentle pressure, this technique is very safe for cancer patients; reflexology is contraindicated only for patients with compromised skin on the hands or feet. There are few clinical trials regarding the benefits of reflexology; however, some studies have shown that the benefits to cancer patients include a reduction in pain, nausea, and vomiting. Our department

was involved in a multi-institutional NIH clinical study of patients with stage III or IV breast cancer and their use of reflexology. The study found that reflexology is safe for use in advance-stage breast cancer patients and resulted in improvements in physical function, dyspnea, and fatigue [34]. A second study is in progress at our institution to investigate the possible benefits of reflexology performed at home by a trained caregiver.

Yoga/yoga therapy

Yoga is a mind–body complementary health approach that uses breathing, specific physical postures, and meditation to promote relaxation. Yoga has been shown to potentially have physical benefits in cancer patients (such as improving sleep and reducing fatigue [35–38] and reducing pain and physical discomfort [39]) and psychological or mental benefits (including improving QoL [38, 40, 41], reducing stress, anxiety, and depression [38, 42], and improving cognitive function [43]).

Yoga can be offered as a group class, while yoga therapy is typically a more focused one-on-one program with a yoga therapist. These programs are typically open to all patients, as the postures can be modified to account for the needs and limitations of cancer patients.

Other considerations

Future clinical trials

Many IM modalities lack rigorous clinical studies that demonstrate efficacy. As stated, we currently have clinical trials in progress regarding the use of massage to improve CIPN and the use of reflexology with late-stage breast cancer patients. We have also initiated a trial to investigate whether clinical massage can increase a patient's range of motion post-mastectomy. There are numerous other clinical trials in progress at other institutions to evaluate the benefits of various IM modalities to cancer patients.

For example, the various effects of massage on cancer patients are being investigated, including those involving cancer-associated pain and fatigue and other cancer-related effects. In addition, Reiki is being investigated for its effects on anxiety and disease progression in prostate cancer patients, on fatigue in patients receiving hormonal therapy, and on neurotoxicity and QoL in patients with CIPN, while other clinical trials are investigating the benefits of reflexology to breast cancer patients.

Clinical trials such as these can be important as they could provide evidence-based treatment plans to patients and thus increase confidence in IM modalities.

Cancer support/survivorship

Cancer patients have long-term needs and issues that require attention after treatment has ended [44]. Cancer survivorship programs exist to help cancer patients deal with these late effects, such as heart conditions that are a result of treatment, lymphedema, range of motion restrictions, fatigue, CIPN, hot flashes, pain, and anxiety, in addition to the emotional distress that arises from a cancer diagnosis and treatment and the loss of contact with care providers after treatment has ended. Cancer survivorship programs are a new standard required by the Commission on Cancer for a program to be accredited, and IM is required to be included in such programs. IM Departments can use these survivorship clinic programs to educate patients on services, such as naturopathic oncology, oncology massage, acupuncture, and guided imagery, that can be used to alleviate symptoms and help survivors achieve a healthy, balanced life.

In addition, breast and ovarian cancer support groups can offer education and support to cancer patients and their families from diagnosis on. Regular presentations can be used to help educate the patients on the benefits and use of complementary modalities.

Patient satisfaction

Providing various IM modalities to cancer patients is a very important part of their treatment. Cancer patients as a group use these modalities at a high rate—according to one study, 68.7% of the cancer patients surveyed used some type of IM modality (excluding prayer or other spiritual practices) [31]. Patients use these modalities as a cancer therapy to relieve cancer-related physical and emotional symptoms. However, cancer patients frequently do not disclose their use of IM approaches to their oncologists [45], which can be dangerous. Therefore, having a dedicated IM Department that works with the oncology team provides a safe way for cancer patients to utilize the modality that best suits their needs.

Anecdotally, in our experience, patients appreciate having access to an IM Department and complementary health approaches. Patients, family members, and the oncology staff self-report high levels of satisfaction with the program and the services provided. In addition, many of the philanthropic donations to the IM Department come from oncology patients and their families in gratitude for the care they or their loved ones have received.

Conclusions

We have demonstrated that IM is a valuable component of the care of the oncology patient. Oncology patients and survivors have unique needs due to the physical and emotional effects of the cancer and the cancer therapy. A dedicated IM Department

within a hospital system allows for coordinated, multi-modal care for the patient, in which the IM practitioners work together to determine the best treatments for the patients to support the patient and their allopathic care. Each modality has a different mode of action and can focus on different aspects of the patient's health, depending on each individual's need. However, care must be taken to accommodate the potentially fragile condition of the oncology patient. There are different contraindications for the different IM modalities, and the IM practitioners must be specifically trained in dealing with oncology patients to safely care for this patient population. Overall, the different IM modalities work together to care for the whole person by reducing treatment side effects and improving function, sleep, and well-being, and thus, IM plays a valuable role in the care of cancer patients.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

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