



Massage in Oncology – Does It Help or Harm?

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Abstract

Introduction: Cancer is a growing proportion of the causes of morbidity and mortality worldwide. The number of oncological patients who are looking for alternative therapies using conventional methods is also growing. The group of alternative procedures includes, among others, massage, for which until recently cancer was an absolute contraindication. Despite numerous controversies, massage is the subject of many scientific studies. The aim of this article was to analyze the latest reports on the use of massage in oncology and to assess the validity and advisability of massage procedures in cancer patients.

Materials and methods: A systematic review of the oncology massage literature from 2011–2020 has been carried out using scientific databases, such as PubMed, ResearchGate and Cochrane.

Results: Massage is a popular alternative treatment. Many studies on its use show statistically significant effects. However, it should be applied with great care in order not to harm the patient and not to affect the activity of cancer. This is possible thanks to the use of special massage techniques and appropriate rhythm, also by avoiding the areas most affected by the disease.

Conclusions: More and more people are suffering from cancer, so it is important to develop alternative treatments to alleviate the side effects of basic treatment. An analysis of the available sources shows that massage can be performed if the masseur takes appropriate precautions when performing the techniques. There is a need for further studies confirming the effectiveness of massage in oncological patients.

Key words: massage, cancer, complementary and alternative medicine, integrative oncology.

Introduction

Cancer is a growing problem in the 21st century. Statistics on cancer morbidity and mortality are growing at a very fast pace worldwide. The GLOBOCAN 2018 report, which was published by The International Agency for Research on Cancer (IARC) estimates that one man in five, as well as one woman in six, will suffer from cancer during her lifetime. The report also predicts that one in eight men and one woman in eleven will die because of cancer [1]. The reason for the increase in these statistics is three main factors: 1) a growing population that is getting older, 2) increased exposure to cancer risk factors and 3) the economic and social development of the countries of the world [2]. The peculiar popularity of cancer causes an increasing number of patients to seek new ways to fight with the pain, anxiety or even depression in addition to conventional methods of treatment. These methods are then called complementary and alternative medicine (CAM). Among them there is a massage [3].

For many years there was a rule that cancer is an absolute contraindication to massage. The theory has had a major impact on the medical community and its effects can be felt even today, despite the inaccuracy of this belief. Among many therapists, the fear of the oncological patient still persists, mainly related to training them according to old scientific reports. Modern schools of massage approach the disease in many ways, some require the consent of the attending physician, others only repeat the guideline: “massage oncological patients carefully”. Doubts about the safety of massage use result in the lack of education of students so that they are not taught how to deal with cancer in practice and often take additional paid courses [4]. Despite the obstacles, the area of research on the use of massage and its participation in oncology is still growing [4,5]. In 2008 the international organization The Society for Oncology Massage was established. It is active in the field of massage education and development, and membership requires completion of a seminar providing basic knowledge in this field. In October 2019, as part of the American Massage Therapy Association National Convention, the “Research Panel

of the Massage Therapy Foundation: Cancer and Massage” was established [5]. Therefore, it is visible how the attitude to massage in cancer patients changes and more and more often there is only a condition that a physiotherapist or masseur in the case of oncological patients must have an advanced level of skills in order to be able to make modifications individually to the patient depending on the body regions covered by cancer [6].

The aim of the article is to discuss the advisability of using massage in oncology by comparing the reports showing the effectiveness of massage as a form of therapy in cancer with other sources that discourage the use of this method.

Massage as a technique and a part of CAM

Massage is a well-known therapeutic method used for a very long time. The first records of massage treatments come from ancient China and India, while the first reports can be found in works of Hippocrates, Celsus and Galen. In the history of massage the importance of contact with the patient, i.e. touch, which develop as the first human sense in the fetal period, has always been emphasized. Massage is considered a kind of art where touching the patient and technique play an important role [7].

The therapeutic effects of the massage affects the entire human body, mainly the muscular, circulatory and nervous systems. In addition, the massage treatments relax and unwind, reducing muscle tension and emotional stress [8]. Benefits also include: increased pain threshold, i.e. reduced sensitivity to pain and local improvement of tissue blood supply. Therefore, the massage affects the emotional state, and many patients take it in good part as a pleasant and calming treatment [7,9].

Due to the mentioned health benefits, it is justified to classify massage as an alternative and complementary medicine (CAM) method, including non-pharmacological products and treatments such as acupuncture, osteopathy, reflexology, psychotherapy or herbal medicine [10]. Due to its high availability, CAM plays an increasingly important role in the health

system. The steady increase in use over the last 15 years has had a broad impact on medicine, economy and society [11]. The data demonstrate that 48.9% of 468 patients with malignant tumors in Italy are using or have recently used CAM [12]. Complementary medicine is widely used in the treatment of oncological patients, where the main aim is to reduce the ailments and side effects accompanying the proper therapy. The basic anticancer treatment supported by selected elements of alternative medicine has taken the name of integrated oncology, which is part of CAM. The Integrative Oncology (IO) includes, among other things, lifestyle modifications and the use, together with conventional treatment, of natural products [13].

The popularity of massage in CAM was proven in a survey conducted in Australia in 2016. The survey covered as many as 275 health institutions with specialized cancer services. Integrative Oncology is available in this country at 71 of the surveyed sites and can be used at home and in hospital. Among the services offered, the most common was massage – 76.1%, followed by psychological assistance – 71.8%, and assistance of movement – 39.4% [13]. However, attention should be paid to the frequent use of massage treatments by oncological patients without consulting the doctor who is carrying out the treatment. Any concealed activities and treatments are potentially dangerous to health, so they are a very important problem in the therapeutic process. The key in this situation is good communication between the physician and the patient, knowledge of the latest recommendations and rules of complementary procedures, which will allow selecting appropriately individualized therapy [13].

Data supporting effectiveness of massage

The studies confirm that massage is one of the most effective non-pharmacological methods of pain treatment in oncological outpatient patients [5]. The condition for the effectiveness and safety of the treatment is the knowledge of the masseur supported by experience and training in onco-

logical massage. An individual, special approach to the patient is necessary, other than the standard massage of a standard healthy person [4].

When performing the oncological massage, the precautions shown in Table 1 must be observed.

Table 1. Precautions for oncological massage [4]

Activities to avoid when performing massage	Activities allowed while performing massage
<ul style="list-style-type: none"> • direct pressure on the tumor area • positions causing pressure on the tumor area • positions where gravity forces increase swelling • intense rubbing of the tumor area • friction, pressure and stretching of the skin around the tumor area • avoiding contact with cuts, wounds • manipulation, intense movements in the joints in the tumor area 	<ul style="list-style-type: none"> • kneading and stroking gently, with a force corresponding to the distribution of the lubricant • stress and pressure graded according to the area • choosing positions and facilities to reduce discomfort • touching and stroking within the whole body with or without light pressure • consulting a doctor on the technique and force of pressure

Massage performed both during and after the completion of the oncological treatment brings great tangible benefits in the daily functioning of patients in both the physical and mental sphere. Fatigue in oncological patients includes a multidimensional subjective sense of physical, emotional and cognitive exhaustion resulting in lack of physical activity, reduced joint mobility and spinal pain. Dysfunction of nervous conduction and activity of the autonomic system also predispose to depression and malaise [14,15]. Moreover, fatigue can be considered to be one of the biggest problems for cancer patients after treatment, causing a chain of successive side effects. The pressure applied during the massage can stimulate type 3 and 4 of mechanoreceptors, which results in nervous parasympathetic stimulation. The ability of autonomic nervous fibers to detect changes also affects the limbic system controlling emotions. Thus, increased parasympathetic stimulation and simultaneous reduction of sympathetic activity is a mechanism reducing the feeling of chronic fatigue, improving the patient's well-being and functioning in the mental and physical sphere [14,16].

Massage as a form of maintenance treatment is believed to relieve symptoms such as nausea, depression, anger and anxiety [4]. This is proved by a survey conducted on women with breast cancer in Bydgoszcz and Grudziądz. It has been shown that every tenth woman felt anxiety caused by the disease and treatment and was depressed. In addition to psychological assistance, every fourth woman chose a massage, while other methods were chosen less often [3].

Data advising against use of massage

For many years, massage was strictly prohibited in cancer patients. In Poland, according to the “Guidelines of the National Council of Physiotherapists for the provision of health services in the field of physiotherapy and their description in medical documentation”, the occurrence of cancer in the past has been referred to as the “red flag” of contraindications for performing physiotherapy procedures. However, it is not specified how many years should pass from the onset of cancer [17].

The discouragement of massage application is caused by several aspects. Among them, there are several mechanisms that cause the spread of neoplastic changes due to massage. The first of these is mechanical lymphatic proliferation. Another factor may be the mechanical expression of extracellular matrix metalloproteinase (MMP) caused by mechanical force delivered during the massage procedure. It has been shown that MMPs are important in the process of cancer cell migration, and high concentrations indicate poor prognosis or higher risk of metastasis. Studies carried out on rats do not exclude the participation of massage treatments in the lymphatic spread of lesions and increased secretion of MMPs. Other mechanisms are based on combinations of the two [18].

There are few reliable scientific studies describing the effect of compression generated during a massage on the spread of neoplastic tissues [16]. In 2004, a study of 34 women after breast cancer removal showed a higher number of NK cells and lymphocytes among the group undergoing massage procedures [19]. It is also not possible to clearly define

the role of massage treatments in the case of growing and spreading tumors. A case study of a 12-year-old boy suffering from osteomyosarcoma, who underwent a series of massage treatments as standard for most diseases in Asian countries, suggests a negative impact of this method on cancer. 17 days after the end of the massage series CT scan showed many metastatic lesions in the lungs and liver, additionally MRI of the thoracic spine and marked fluororemoxyglucose-positronic emission tomography showed the spread of neoplastic cells in the femur, thoracic and lumbar spine, pelvis and liver. Despite undertaking two cycles of chemotherapy and radiotherapy, the patient died of numerous metastases 13 months after the initial diagnosis. The authors assume the participation of massage procedures in metastases and rapid development of the disease [20].

Hayashi et al. carried out the studies about the relationship between tumor compression and related lymph node metastases in the mouse model of fibrosarcoma. An increase in the number of neoplastic cells pouring into the lymphatic ducts was demonstrated [20].

Collinge et al. also suggest an increased risk of lymphoedema in patients due to poorly selected parameters and massage techniques. It is believed that the pressure exerted on tissues in a deep massage leads to damage of delicate lymphatic structures. Many modifications are necessary for oncological patients with impaired lymphatic function or after lymph nodes removal or irradiation. Otherwise, the delivered heat, high pressure and excessive movements in the joints of the affected area may lead to the development or exacerbation of lymphatic oedema [4].

Another risk associated with the use of massage is the misdiagnosis of patients with increasing pain or other musculofascial pain, which is a symptom of osteosarcoma. The physician, by ordering the massage as a method of conservative muscle pain treatment, may contribute to worsening of the patient's condition and faster development of the tumor, due to the massage technique inappropriate for oncological patients [18].

Discussion

Many current studies examine the advisability and reasonability of using massage therapy during cancer treatment. The number of reports about the positive effects of massage in oncological patients is increasing. The first of these propitious results is pain reduction. Batalha et al. examined 52 children with cancer. Brief Pain Inventory (BPI) and Visual Analogue Scale (VAS) were used to assess pain. After a week of massage sessions, the pain and its intensity during walking decreased statistically. There were no side results of therapy [21]. Jane et al. in their research included 72 people suffering from cancer with bone metastases. The effects of the massage were visible by the reduction of pain, which contributed to the improvement of muscle relaxation [22].

The benefit of massage treatment for patients is also the improvement of mood and quality of sleep. A positive effect on mood in adults and children contributing to the reduction of anxiety, stress and depression is achieved in many studies [23,24]. Kinkead et al. emphasize that the visible advantage of massage is fatigue reduction through improved sleep quality and an impact on REM phase length [15]. Furthermore, Wang et al. concluded that reducing fatigue improves the quality of life [16].

The positive effects of massage are also evidenced by studies conducted by Toth et al., who prosecute weekly massage therapy in the study group. The examined patients were hospitalized because of receiving chemotherapy. Researchers consider that the use of massage improves the mood and well-being of patients at the end of life, and this improvement relates not only to pain but also to sleep quality. It has to be noted that more randomized controlled trials are still needed to confirm these findings [25].

Massage with its healing properties can also be combined with aromatherapy. A 22 patient study examined by Izgu et al., after 6 weeks of aromatherapy massage showed, that neuropathic pain caused by chemotherapy decreased [26]. Interestingly, massage combined with fragrance oils helped 66 patients with diagnosed colorectal cancer in

Thailand as well. In this study group classic massage with the addition of ginger and coconut oil was used for a week. Pain and strain intensity decreased, but the authors also analyzed lymphocyte levels before and after therapy to confirm the results. The effectiveness and credibility were verified by the fact that the average lymphocyte count after treatment was significantly higher in the study group than the count in the control group, which did not have massage treatments. The research team suggests that Thai massage combined with aromatherapy can increase lymphocyte levels by up to 11%, which can have a positive effect on the body's immune system [27].

Massage therapy is a very developed method of alternative treatment. Its positive effects in cancer patients have also been demonstrated by the fact that it is used for patients of all ages – children and adults [15,16,21]. The types of massages used in cancer vary from classic massage, sometimes called Swedish, to Thai or Japanese [23,27,28]. The use of this method in oncology is justified by a large amount of research carried out on this subject, which are presented in this review.

Summary

The use of massage therapy in cancer is nowadays a large problem for many doctors and people associated with the medical community. Analyzing foregoing scientific reports, it can be seen that massage has its supporters, but also opponents. This is due to many factors which determine which techniques of massage should be used for this type of patient. It has been emphasized many times that the right pressure, rhythm, direction, frequency and duration of the procedure are important [21]. The massage therapist must be a qualified, gentle and precise person approaching oncological patients with providence and sensitivity. While using any alternative medicine, good communication between the physician and the patient, psychological support and education of the patient's relatives is not without significance [4]. Respecting these mentioned precautions bring numerous benefits, because massage reduces pain, prevents

depression, anxiety and improves general sensation. Massage treatment can support traditional oncological treatment if the patient's condition is analyzed holistically, with an interdisciplinary approach [7,8,9].

Conclusions

1. Massage treatment is a controversial issue in oncology, but despite the associated risk, cancer patients should not abandon this form of therapy.
2. The number of patients suffering from cancer is increasing, therefore the topic of advisability of massage in oncology is a current medical issue.
3. More research is still needed with the participation of cancer patients to confirm the effectiveness of the massage treatment.

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