

Is There a Role for Homeopathy in Cancer Care? Questions and Challenges

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Abstract Patients with cancer commonly use complementary and integrative medicine, including homeopathy. Homeopathy has grown in popularity with the public but is viewed with skepticism by medical academia and is still excluded from conventionally prescribed treatments. In recent years, homeopathy has been used in cancer care in Europe and other countries worldwide. This use raised the question if there is any benefit in utilizing this type of care with cancer patients. The purpose of this manuscript is to explore the evidence related to the benefit of homeopathy in cancer care. Limited research has suggested that homeopathic remedies appear to cause cellular changes in some cancer cells. In animal models, several homeopathic remedies have had an inhibitory effect on certain tumor development. Some clinical studies of homeopathic remedies combined with conventional care have shown that homeopathic remedies improve quality of life, reduce symptom burden, and possibly improve survival in patients with cancer. The findings from several lab and clinical studies suggest that homeopathy might have some beneficial effect in cancer care; however, further large, comprehensive clinical studies are needed to determine these beneficial effects. Although additional studies are needed to confirm these findings, given the low cost, minimal risks, and the potential

magnitude of homeopathy's effects, this use might be considered in certain situations as an additional tool to integrate into cancer care.

Keywords Homeopathy · Cancer care · Ultra-diluted remedies · Complementary medicine · Integrative medicine · Quality of life in cancer care

Introduction

Patients with cancer commonly use complementary and integrative medicine (CIM) to improve their quality of life, to gain a sense of control, and to participate actively in their care. Patients often search for additional options to manage the chronic side effects of treatments, for ways to reduce the risk of recurrence or secondary cancers, and sometimes for additional treatments for comorbid conditions exacerbated by their illness. In order to achieve these goals, some patients choose to incorporate CIM therapies such as meditation, acupuncture, homeopathy, yoga, and diet into their care [1–3].

Homeopathy has grown in popularity with the public but is viewed with skepticism by medical academia and is still excluded from current conventional recommendations. Homeopathy is practiced extensively in Europe, Asia, Middle East, and South America to treat functional disorders and minor ailments. Homeopathy is based on the theory that highly diluted natural substances affect illness and improve symptoms. At times, the dilution level is far beyond the Avogadro number which reflects that there are no original molecules in those dilutions. In the USA, the homeopathic remedies that are prepared in this unique process are supervised by the Federal Drug Administration [4].

Unfortunately, not much research has been published on the use of homeopathy among cancer patients in the USA. A

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2015 search of the term “homeopathy” in PubMed produced over 5000 citations; approximately 250 of these citations relate to homeopathy and cancer [5]. With this increased interest in homeopathy among the general public in many countries, as well as among cancer patients worldwide, the need to explore the evidence about the benefit of this method of care arose. In this paper, we will first establish the popular use of homeopathy throughout the world, and then we will address the frequent questions and challenges that arise with this use, such as the clinical effectiveness of homeopathy in cancer care, the safety of homeopathy, and the effect of combining homeopathy with conventional cancer care as well as findings from the laboratory such as *in vitro* studies and animal studies.

Popular Use of Homeopathy

A recent survey, published in 2015 in the USA, revealed a trend of increased use of homeopathy in the general population. The study estimated that over five million adults and over one million children use homeopathy. Homeopathy is used more than well-known CIM therapies such as guided imagery, acupuncture, energy healing therapy, naturopathy, hypnosis, biofeedback, and Ayurvedic medicine [4].

In Europe, homeopathy is used during and after cancer treatments. A survey of close to 1000 cancer patients in 14 European countries revealed that 36 % of cancer patients were using some form of complementary medicine. In the surveyed countries, cancer patients often used homeopathy with herbal remedies as the main CIM therapy [6].

In the UK, a questionnaire-based study revealed that homeopathy was one of the mainly used CIM therapies by cancer patients [7].

Approximately 34 % of patients treated in a French cancer department reported using CIM; of these patients, the majority (42 %) used homeopathy [8].

In Germany, cancer patients (both adults and children) tend to use homeopathy in addition to conventional treatments. Homeopathy, as a matter of fact, is the most frequently used CIM treatment among German adults and children with cancer [9, 10].

In Italy, homeopathy is also commonly used and is one of the three leading complementary therapies used by cancer patients [11]. One survey at two oncology day hospitals in Italy revealed that 17 % of patients on chemotherapy used CIM. Homeopathy and herbal medicine were the most commonly used forms of CIM in those hospitals [12].

Another large European survey published in 2015 involved 236 centers that provide integrative oncology services in the public health system. In this recent study, homeopathy was one of the leading CIM therapies (40.4 %) [13••].

Effectiveness of Homeopathy in Clinical Care

Clinicians often question the effectiveness of homeopathic remedies in cancer care. Are there any scientific studies that support the claim that homeopathy has clinical effects? Conventionally trained healthcare providers often are skeptical of the idea that a medication that is diluted to the extent that there is no original material still has clinical effects. But even when phenomena appear to have no explanation, one needs to approach these questions scientifically as with any clinical question.

A recent report from an Australian team assessed the general effectiveness of homeopathy. This study was based on three sources: “an overview of published systematic reviews done by an independent contractor dating 1997–2012, an independent evaluation of information provided by homeopathy interest groups in Australia, and consideration of clinical practice guidelines and government reports on homeopathy published in other countries” [14]. However, the study did not include any *in vitro* studies, animal studies, or studies that were not included in the systematic reviews published before 1997 or after 2012. The study did not cover cancer as a possible health condition other than hot flashes that was a result of breast cancer treatment. The study concluded that no reliable evidence shows that homeopathy effectively treats any illnesses [14].

However, in 2011, the Swiss government published a report in English concerning the use of homeopathic medicine [15]. This report comprehensively evaluated homeopathy as a medical system integrated into healthcare. This government initiative resulted from the high demand for and widespread use of CIM therapies in Switzerland, not only among consumers but also among physicians.

The Swiss report carefully reviewed the evidence from randomized double-blind and placebo controlled clinical trials testing homeopathic medicines, they also evaluated the “real world effectiveness” as well as safety and cost-effectiveness [15]. The report also conducted a comprehensive review of preclinical research such as botanical studies, animal studies, and *in vitro* studies with human cells. After assessing the evidence from basic science research and high-quality clinical studies, the Swiss concluded that homeopathic remedies seem to induce cellular effects as well as changes in living organisms. The report also mentioned that 20 of the 22 systematic reviews of clinical research, testing homeopathic medicines, detected a trend in favor of homeopathy. The authors concluded that homeopathic treatments should be reimbursed by Switzerland’s national health insurance program, and the Swiss government followed this recommendation [15].

Clinical Experience

Because of the scarcity of knowledge about the efficacy of many CIM therapies used in cancer care, the National Cancer Institute (NCI) has developed a program that encourages CIM practitioners to present their data to evaluate if specific CIM therapies can trigger further innovative research. Over the past 20 years, the Best Case Series Program has invited CIM practitioners to submit clinical data on patients that had significant tumor reduction in response to an alternative modality for cancer treatment. Each case is reviewed against the same rigorous standards of evidence of novel conventional cancer therapies. The NCI Best Case Series Program offers practitioners who treat patients with cancer, expert assistance in identifying and compiling persuasive case studies, as well as the opportunity to have their data evaluated at the National Institute of Health [16, 17].

In 1999, researchers from the Prasanta Banerji Homeopathic Research Foundation (PBHRF) in Kolkata, India, submitted data to this NCI program. These researchers developed a method of using homeopathic medicines through prescribing specific remedies for specific malignancies. They followed 17,324 patients with malignant tumors who were treated at PBHRF between 1990 and 2005. In 19 % of the patients, the malignant tumors completely regressed after homeopathic treatment, and 21 % of the patients were the same or improved after homeopathic treatment [18].

Drs. Prasanta and Pratip Banerji, the founders and leaders of this clinic, presented to NCI the data from patients with cancer treated with the Banerji protocol that had experienced documented improvement. The patients treated in this clinic received only homeopathic remedies and did not receive any additional conventional treatment such as surgery, radiation, or chemotherapy. After rigorous evaluation of the findings, NCI concluded that there was sufficient evidence of possible efficacy to warrant further research [19].

Another study by PBHRF researchers and researchers at The University of Texas MD Anderson Cancer Center described 15 patients diagnosed with documented intracranial tumors who were treated exclusively with the homeopathic remedies *Ruta graveolens 6c* and *Calcarea phosphorica 3X*, without additional chemotherapy or radiation. Of these 15 patients, 6 of the 7 who had glioma showed complete regression of the tumors [20].

Safety of Homeopathy

A large prospective multicenter cohort study evaluated the long-term health of patients 8 years after the use of homeopathic treatments. In this study, researchers evaluated 103 homeopathic primary care practices in Germany and Switzerland involving 3709 patients. Patients had chronic ailments

including allergies, headaches, chronic skin problems such as atopic dermatitis, and multiple recurrent infections in children. The authors found that patients who seek homeopathic treatment are likely to improve with treatment. This effect was maintained for as long as 8 years. Because the study was not intended to prove cause and effect, the authors were unable to conclude if this effect was related to the homeopathic remedies themselves or to the unique patient-doctor communication involved in this process [21].

In 2009, a review of clinical trials in homeopathy and cancer was performed by The Cochrane Collaboration. This review evaluated the safety and effectiveness of homeopathic medicines that were used to prevent or treat adverse effects of cancer treatments. The reviewers found eight controlled trials with a total of 664 participants. The researchers concluded that there were no serious adverse effects related to the homeopathic remedies that were used. The review also found some preliminary data that suggest beneficial effect of homeopathy in dermatitis during radiotherapy and chemotherapy-induced stomatitis. There was no convincing evidence for the efficacy of homeopathic remedies for other adverse effects of cancer treatments [22].

Homeopathy Combined With Conventional Cancer Care

To evaluate the added value of homeopathy to conventional care, a prospective observational study in Switzerland and Germany evaluated two cohorts of patients with cancer, one cohort was treated with homeopathic complementary therapy in addition to conventional care (surgery, chemotherapy, radiation, hormone therapy, and others) and one cohort was treated with only conventional care. In this study of 639 patients, researchers observed that quality of life and fatigue symptoms improved in cancer patients who received the homeopathic complementary treatment [23••].

A more recent randomized controlled trial evaluated classic homeopathy as a supplement to conventional cancer care. All patients received standard anti-neoplastic therapy and were randomized to receive classic homeopathic adjunctive therapy in addition to standard therapy. This study of 285 patients revealed that patients who received the homeopathic treatment had significantly better global health status and subjective well-being than those who received only conventional cancer care [24••].

A triple-blinded study with a meticulous research methodology (Jadad score 5) investigated the effectiveness of single and combination homeopathic remedies used to treat hot flushes in women with a history of breast cancer. In this study, patients were randomized into three groups: a placebo combination and a verum single remedy, a verum combination medicine and a verum single remedy, and two placebo

combinations. The selected remedies were individualized for each patient and included *Sepia*, *Calcarea carbonica*, *Sulfur*, *Llachesis*, and *Kali carbonicum*. The combination remedy was Hyland's Menopause tablets, which contain amylnitrate, *Sanguinaria canadensis*, and *Llachesis*. Even though the results were not positive for improving hot flushes, one cannot ignore a significant improvement in general health score that was observed in both homeopathy groups as compared with the placebo group. Researchers concluded that breast cancer survivors did have some positive benefit from the use of homeopathic remedies [25].

Homeopathy and Survival

Other than encouraging case reports, there is little research on long-term survival of patients who used homeopathic care during cancer treatment. There are a few clues coming from clinical practice and limited research. As mentioned above, Dr. Banerji reported that in 40 % of his patients, the malignant tumors were either completely regressed, improved, or static after homeopathic treatment [18]. Unfortunately, this claim was not substantiated with rigorous scientific research.

At the Medical University of Vienna in Austria, researchers collected survival data on 538 patients with fatal disease and poor prognosis who used homeopathy in addition to conventional cancer care. The study included patients with glioblastoma, lung cancer, cholangiocellular carcinoma, pancreatic adenocarcinoma, metastatic sarcoma, and metastatic renal cell carcinoma [26••]. Median overall survival was compared with experts' predictions of survival outcomes by specific cancer type. The researchers found that these patients survived longer than the expected prognosis, across all observed cancer types. Although the results were promising, the authors were cautious about the findings owing to the small sample size and limited data about specific treatment characteristics. The authors emphasized the need for further study of homeopathic care in cancer patients.

Preclinical Findings: In Vitro and Animal Studies

The clinical response to homeopathic remedies could suggest that the homeopathic treatment could relate to placebo effect or effects related to a unique patient doctor communication. So researchers have also investigated the effect of homeopathic remedies on cancer cell survival in the laboratory where those indirect factors cannot influence this response.

In 2004 at MD Anderson Cancer Center, Pathak et al. showed that *Ruta graveolens*, a homeopathic remedy commonly used by Dr. Banerji for brain cancer, "selectively induces cell death in brain cancer cells (Glioblastoma

multiforme) while promoting proliferation in normal peripheral blood lymphocytes" [20].

Because of this study, many patients with brain cancer that attended the integrative medicine clinic of MD Anderson raised questions about this homeopathic remedy or had marked interest in integrating this treatment into their conventional care [27]. Most of the information on this treatment is available to patients on the internet, health food stores, and through support groups.

Out of this interest, a study conducted in the lab at MD Anderson revealed that four ultradiluted remedies (*Carcinosin*, *Phytolacca*, *Conium*, and *Thuja*) exerted preferential cytotoxic effects against breast cancer cells, causing cell cycle delay and apoptosis without affecting the normal mammary epithelial cells. These effects were accompanied by altered expression of the cell cycle regulatory proteins, including downregulation of phosphorylated rb and upregulation of the CDK inhibitor p27, which were likely responsible for the cell cycle delay/arrest as well as induction of the apoptotic cascade that manifested in the activation of caspase 7 and cleavage of PARP in the treated cells.

Another observation that caused increased interest involved a comparison of the cytotoxic effect of the homeopathic remedies to Paclitaxel, a commonly used chemotherapeutic drug for breast cancer. In this study, the cytotoxic effect of two of the remedies, *Carcinosin* and *Phytolacca*, appeared to have similar cytotoxic effect to the activity of Paclitaxel on the breast cancer cells. On the other hand, the homeopathic remedies did not affect the normal mammary epithelial cells while the Paclitaxel had similar cytotoxic effect as it had on the breast cancer cells [28].

Another interesting report by Amri et al. from Georgetown University revealed reduced tumor volume in mice that were inoculated with human prostate cancer cells and were treated with the homeopathic remedy of *Sabal serullata*. In this study, the examination of the ultrastructural cytomorphology revealed cellular disintegration which cannot be explained with the well-defined apoptosis or necrosis cell death. The analysis indicated a novel caspase-independent cell death, which might explain the significant tumor size reduction in the treated animals. The authors concluded that their data suggest that these ultra low concentrations triggered a pathway not yet characterized as cell death and not related to classical apoptosis or necrosis [29].

MacLaughlin and his group from the same university found that prostate tumor xenograft size was significantly reduced in *Sabal serrulata*-treated mice compared to untreated controls. The response in the human prostate cancer was specifically induced by *S. serrulata*; other homeopathic remedies had no effect. The researchers concluded that *S. serrulata* should be further investigated as a specific homeopathic remedy for prostate cancer [30].

A few additional studies from India indicate that homeopathic remedies at ultra low doses may be able to decrease tumor progression.

Kumar et al. [31] evaluated the inhibitory effects of homeopathic preparations *Ruta 200C* and *Phosphorus 1M* (1000C) against *N*-nitrosodiethylamine (NDEA)-induced hepatocellular carcinoma in rats as well as 3-methylcholanthrene-induced sarcomas in mice. Administration of the homeopathic remedies slowed the tumor growth and significantly reduced the elevated marker enzyme levels as revealed by morphological, biochemical, and histopathological evaluations, as well as increased the life span of mice harboring the tumors [31].

Arora et al. evaluated the effect of homeopathic remedies on human kidney, colon, and breast cancer cells [32]. Researchers found that the “homeopathic medicines had highly significant effects in those cancer lines, producing cytotoxicity and a decrease in cell proliferation. In the homeopathic treated cultures apoptosis was evident. There was cell shrinkage, chromatin condensation, and DNA fragmentation. The authors concluded that the study provides preliminary laboratory evidence indicating the ability of homeopathic medicines to function as anticancer agents” [32].

Sunila and Kuttan evaluated the effect of the homeopathic remedy *Thuja occidentalis* extract on the inhibition of lung metastasis induced by melanoma cells in C57BL/6 mice [33]. A marked reduction in tumor-nodule formation was shown. The level of collagen hydroxyproline (21.13 µg/mg protein) was higher in the lungs of control animals with lung metastases than in the lungs of normal animals (0.98 µg/mg protein); however, the level was significantly reduced in animals treated with the homeopathic remedy. The lifespan of the *Thuja*-treated animals also was reported to be significantly increased [33].

Conclusion

Despite advances in cancer care, patients continue to experience distress and disability during cancer treatment and afterward. As a result, patients use complementary modalities such as homeopathy to address these needs. Data from several sources suggest that cancer patients throughout the world increasingly use homeopathy. With the current trend in oncology to look at personalized medicine, nanotechnology, and utilization of substances that affect the immune system, there is a need to keep an open mind to new possibilities of care that in the past were considered implausible.

Limited research has suggested that homeopathic remedies appear to cause cellular changes in some cancerous cells. In animal models, specific homeopathic remedies have had an inhibitory effect on tumor development. Studies of homeopathic remedies combined with conventional cancer care show that these remedies improve quality of life, reduce

symptom burden, and possibly improve survival in patients with fatal disease. In vitro studies, animal studies, and clinical interventions that combine homeopathy with conventional cancer care suggest that homeopathy might improve the well-being of patients and might affect the progression of cancer and patient survival. These findings warrant comprehensive clinical studies to determine the effects of homeopathy on cancer and patient survival. Although additional studies are needed to confirm these findings, given the low cost and minimal risks and the potential magnitude of homeopathy's effects, in certain situations, one might consider the use of homeopathic remedies as an additional tool to integrate into cancer care.

Compliance with Ethics Guidelines

Conflict of Interest The author declares that he has no competing interests.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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