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Integrated Approach of Yoga Therapy for Cancer

By Amritanshu Ram

INTRODUCTION

Cancer is a leading cause of death worldwide accounting for 7.4 million deaths (13% of all deaths worldwide) in 2008.(1) Research to understand the etiology and eradicate the tumor burden without harming the host has progressed greatly and has resulted in successful cure (in a few cancers), improved longevity and quality life. But the world statistics indicates that the prevalence of the disease has not reduced which is intriguing. In India alone, 22.2% of women presently suffer from cancer which is expected to increase to almost 30% in the next five years. (2) This is one of the reasons that have led patients to resort to complementary and alternative medicine (CAM). According to a previous survey, approximately 21% of leukemia survivors in the United States had engaged in CAM practices.(3) In India, approximately 56% of the cancer patients took recourse to alternative therapies (3). Among these, yoga was the third most commonly accepted therapy.(3) This survey also compiled the reasons for resorting to CAM. They were: management of side effects, reduction of costs involved, avoiding poor quality of life, minimizing psychological ill-health and reducing recurrences in spite of undergoing such traumatic treatments. The reason appears to stem from a more fundamental cause than these. As treating professionals and researchers we seem to have missed a major factor, namely the mind, in our entire search for a solution. Conventional treatment has concentrated on dealing with pathophysiology at physical, physiological and molecular levels, but in reality the human system is governed by a more powerful subtle entity called the mind.(4)

Life style and psychosocial stresses were recognized to be contributory to sickness, by a few researchers, as early as nineteen seventies(4), but it is only recently that we are able to accumulate enough data to propose a psycho-neuro-immunological model for cancer(5). This has helped to create an awareness of the role of mind body relationship in the etiology and progression of cancer. Anderson et al proposed a model in 1994 that pointed to a relationship between mind and cancer. By 2006 they moved on to create a model that portrayed a linear progressive causal relationship between psychological stress, immune disturbance and cancer. Further, in 2010 Ao, P, et al (6) proposed a non linear mathematical model of the interaction of the caspase-3 molecules in the etiology of cancer based on inputs from several genetic research laboratories.

Among the various CAM treatments available, yoga offers a holistic model using an entirely different concept of understanding human body in health and disease states; it also offers self corrective techniques to restore normalcy. Ancient texts dating back to about 5000 years (Rig Veda, Patanjali Yoga

Sutra and ayurveda) provide a highly evolved conceptual basis for the aetiopathogenesis of disease and its management. The 'Integrated Approach of Yoga Therapy (IAYT) for Cancer', used as complimentary to conventional medicine in all studies conducted by Swami VivekĀnanda Yoga Anusandana Samsthana (S-VYASA) consisted of practices that were based on this model. The aim of this study is to present a holistic model for the eatiopathogenesis of cancer using both the ancient and present knowledge.

METHODS

This retrospective study has been classified under four phases [Table 1]

Participants of Focused group

The Participants of the FGD included eight members consisting of 3 yoga experts with in-depth scriptural knowledge who were all practitioners of these techniques, one post graduate physician, two oncologists who work with cancer patients and understand their major concerns at physical, mental and emotional levels during the conventional therapies, and two research fellows.

Discussion format

The study used the in-depth discussion method of data collection with the purpose of compiling yogic traditional knowledge available in all yoga scriptures. The flexibility facilitated the process of research to become a more humanized method than a restricted questionnaire method. Despite its time consuming characteristic it helped the researchers to interact as contributors to the model. The probing questions and discussions facilitated the development of the model by sharing each others' experiences and develop the steps of the modules that evolved.

Checklist

A check list was used to document the inputs from the experts during the FGDs. It followed a semi-structured format, using open-ended questions in a face-to-face conversational style and the focus was to document the interviews and discussions that were based on the literature review, experiential knowledge and discussions with experts in their respective field.

Procedure

The process of developing the model, involved several small group meetings, correspondences, sitting together for meditation and visiting the experts in the field. A FGD was arranged to give inputs on the check list before arriving at the final model. The integrated approach of yoga therapy (IAYT) for cancer that evolved from these concepts was used in our randomized control studies on breast cancer that formed the material for the eight publications on the complimentary role of IAYT in breast cancer.(7–14)

RESULTS

Phase 1 and 2

Research scholars reviewed Traditional yoga and ayurveda texts and found references to disease etiology in general and mentions of cancer specific pathology and progression. A comprehensive list of all attributes and treatment modalities were compiled for further discussion.

Scientific literature including empirical evidence and review articles were also scrutinized and hypothesized models were noted apart from accumulating information regarding latest trials that had been done in the field of mind body medicine as a disease management strategy.

Contents of the model: Panchakośa viveka (the five components of human being)

According to yoga texts (15), the human system consists of five components [panca kośa]: Physical body (Annamaya Kośa), Subtle Energy or Prāṇa (Prāṇamaya kośa), Instinctual mind (Manomaya kośa), Intellectual or discriminative mind (Vignānamaya kośa) and bliss-full silent state (Ānandamaya kośa) [Figure 1].

Shvetashvatara Upanishad (16) describes that a human being is in perfect harmony with nature and healthy when he is established in Ānandamaya kośa which is the unchanging state of being, the self (called Brahman) and the causal state of being from where all other (ever changing) Kośas emerge. (15) Analogies to explain that Ānanda / perfect health is the unchanging core of one's personality include 'this kośa is like the string in a necklace of beads' (Chapter7, Verse7)(17), like the gold in all jewels (Chapter6, Section1, Verse6)(18) or the clay in different shaped pots (Chapter6, Section1, Verse3).(18) This state is experienced as a state wherein one reaches a state of inner quietitude with awareness and the knowledge that 'I am made of the same universal consciousness and bliss that forms the base material of the entire creation'.(Verse2)(19) As an analogy, a salt doll dives into the ocean to understand the depth of the ocean but gets the joy of becoming the ocean itself by losing its individual entity (20). Waves of thoughts begin in this ocean of blissful quietitude and become grosser and grosser to form the other four components of the body. (Chapter3 Verse3-6)(15) The first wave (spandana) that appears is the 'I' (self awareness) followed by several varieties of waves that form a template of right knowledge, the Vignānamaya kośa. In this state man is in perfect health as he is in tune with nature (15) and leads a healthy life style with complete mastery over his mind (Chapter1 Verse3)(21) As these waves gather momentum with higher amplitude and rewinding speed, [Chapter5 Verse26)(17), (Chapter8 Verse88)(22)] it gathers energy to become the Manomaya kośa in which likes and dislikes begin.(Verse49)(23) As the process of becoming gross continues it goes on to become the vital energy (prāṇamaya kośa) and the physical molecules (Annamaya kośa) (Chapter3 Verse5)(15). Yoga techniques offer techniques of mastering the gross (22) to reach the subtle layers of one's existence by introspective slowing down of thoughts. The subtle controls the gross, for example, if one masters prāṇa he can manipulate the functions of physical body; mind can manipulate prāṇa; vignāna can master the mind and prāṇa. (Chapter1 Verse40) (21) The goal of life is to establish in a state of complete mastery by

remaining in a state of Vignāna, a state of complete freedom and contentment, freedom from all distress and disease (Chapter2 Verse12)(16). This is a state in which one develops the ability to manipulate the laws of nature within the body and outside the body (Chapter1 Verse4)(21).

The model proposes the ability to master the laws that governs programmed cell cycle. Mind is the most highly evolved and the most powerful entity in the manifest universe. A living human body is a flux of continuous changes that is programmed to live a full lifespan of about a century in perfect health if it is not disturbed by major calamities. As man goes through the ups and downs of life (be it exposure to external onslaughts like injury or infection, or emotionally challenging situations), it sets off an imbalance. The scriptures are very emphatic when they say that this imbalance occurs due to lack of mastery over mind which is the starting point of any mind-body disease. Sage Vasistha describes the progression of this imbalance that results in cancer (and/or other lifestyle related disorder) in the text Yoga Vasistha (Chapter9 Verse82-117)(22). The search for happiness in outside objects continues with unresolved conflicts due to wrong notion about the meaning of life and nature of happiness. The nature of this conflict or distress is described as 'uncontrolled recycling of sentences in the mind' (yogic definition of stress)(Chapter5 Verse23)(17) in the Manomaya *kośa*. This imbalance due to uncontrolled speed (udvega) of suppressed emotions when unchecked results in an imbalance and percolates into prāṇamaya *kośa*. This is detectable as disturbed pattern of breathing (increased rate and irregular rhythm) and poor digestion. As this imbalance and loss of mastery goes on for some time it becomes an involuntary habit, a reflex. Chronic constipation or irritable bowel (alternate constipation and diarrhea), fatigue and generalized body aches are the other general (non-specific) manifestations at this level. When unattended by correcting the imbalance at the root cause (the Manomaya and Vignānamaya *kośas*) the process continues and localizes to a specific zone in the physical body (Annamaya *kośa*).

Thus, the uncontrolled rush of prāṇa (vital energy), results in uncontrolled electro-chemical process in the physical body, the annamaya *kośa*. This appears to mean that the physical fight (tissue inflammation) is a reflection of the violence or fight in the mind. We know today that inflammation is a feature of cancer. Thus, the uncontrolled excessive prāṇa (subtle energy) flow seems to cause the changes in the molecular level that goes on to alter the apoptotic programming resulting in immortal cells and perpetuation of cancer cells [Figure 2]. Further, the texts go on to describe that the localization of the disease (cancer) depends on external (insult by carcinogenic agents, trauma, toxins, and infections) or internal (genetic) factors.

In summary, the yogic model proposes that the entire problem is due to repetitive onslaught by uncontrolled thoughts (suppressed emotions) at the mind level (Manomaya *kośa*) which causes excessive prāṇa activity and manifests as violence (inflammation) at annamaya *kośa* to show up as cancer.

Integrated Approach of Yoga Therapy for Cancer

The integrated approach of yoga offers a comprehensive means to overcome the damage by achieving mastery at all levels through deep cellular rest (reducing the speed, imbalance and inflammation). At the physical level (Annamaya *kośa*) there are practices that include: cleansing the body (yogic kriya) of the endotoxins (Aama, as portrayed in ayurveda) both at the gross (fecal matter) and subtle (molecular toxins e.g. free radicals) levels (24); correcting the life style through yogic diet and injunctions for healthy behavior (sleep, activity, speech, righteousness); and providing deep rest (reduce

the speed) to the damaged/sick tissues through physical postures (asanas). Prāṇayama or breathing techniques corrects the imbalances in prāṇamaya *kośa* through voluntary reduction in the rate of breathing.(Chapter2 Verse49) (25) Meditation techniques (Dharana, Dhyana, Samadhi and Sanyama), the Manomaya *kośa* practices are the most important as they aim at direct mastery over the mind, the root cause of the problem by establishing in an introspective state of blissful awareness (dhyana = effortless flow of a single thought. (Chapter2 Verse2)(21) (Chapter3, Verse2)(25). Devotion (bhakti yoga or emotional culture) is another important component that helps in harnessing the uncontrolled surge of violent suppressed emotions through using 'pure love'. At the vignānamaya *kośa* level (intellectual) correction of the false notion is achieved through understanding that 'I am made of the universal consciousness and bliss (*Ānanda*) which is independent of the mind'. At *Ānandamaya kośa* level, karma yoga helps in achieving blissful awareness free from all fears (including fear of death). Thus the highlight of this model is the possibility of the practitioner to de-identify and dissolve oneself in the universal consciousness that is described as existence (*sat*), consciousness (*chit*) and bliss (*Ānanda*), through right knowledge and awareness. All practices including yogic diet, kriya (cleansing), asana, prāṇayama, dharana, dhyana, devotion and self analysis prepare the system to stop the turbulent fluctuations (superficial and deep seated subconscious activities) and allow the mind to rest in a state of inner quietitude (wakeful sleep). A single positive thought (a resolve) introduced to this blissful quietitude (sanyamah) has the ability to reverse the imbalances at all levels. (21) Thus the process of reversing the structural and functional abnormalities at the tissue level is described through this model.

Phase 3: pilot studies

The pilot study data on patients with cancers in different locations in different stages who were admitted for two to three weeks to undergo integrated approach of yoga therapy at the residential health home of the institution were used. These techniques were taught to them by trained experts (two of the senior faculty who were involved in the FGD). Feedback from these patients, immediately after each of these techniques, was recorded. Based on these feedbacks further changes were carried out to evolve the contents of the techniques that were used. The major changes that had to be incorporated were: (a) the duration of each type of practice had to be reduced from 60 minutes to 30 minutes, (b) there was a need for recorded audio CDs, to help them continue the practice and (c) Some of the imageries used during the practice had to be replaced. E.g.: the 'death experience' had to be replaced by 'surrender to the divine lord' which gave much more confidence to face the disease.

Phase 4 -RCTs

Further we conducted two randomized controlled studies(7-14) that used this module called IAYTC (integrated approach of yoga therapy for cancer) based on this model as an add-on during the entire course of conventional management of breast cancer (stages 2 and 3). The results of these studies have shown beneficial effects in psychological health (anxiety, depression, nausea and vomiting, perceived stress, distress); reduction in salivary cortisol; favorable changes in immune measures and lesser degree of DNA damage during radiation therapy.(7-14)

DISCUSSION

This study presents a model of the aetiopathogenesis of cancer that evolved over 5000 years of research in the east by yoga masters as an introspective science. This model of origin and progression of cancer takes into account the existence of subtle aspects of the personality such as prāṇa, mind, and the self (the soul). The holistic model proposes that the root cause of the disease is the wrong mindset or incorrect notion viz 'the source of happiness is the external agents of enjoyment'. The life's ambitions and plans are all based on this notion. Frustrations occur when these are not fulfilled. Emotional suppressions become mandatory to carry on with life. This results in chronic imbalance that disturbs homeostasis and culminates to cancer. This analysis provides the logical basis for using corrective techniques that are used in yoga practices.

Our studies that used intervention modules called IAYTC (integrated approach of yoga therapy for cancer) based on this model as an add-on during the entire course of conventional management of breast cancer (stages 2 and 3) have shown the beneficial effects.(7–14)

Comparisons with other psycho-oncological models

Anderson et al (1994) proposed a bio-behavioral model of the relationship between stresses of cancer based on several publications up until 1994. (26) Her study highlighted the mechanisms by which psychological and behavioral responses may influence biological processes and the health outcomes and gave insights into the role of mind in compliance to standard therapies. Further, based on a decade long (between 1995 and 2005) explosive discoveries on the relationship between psyche and the immune modulation the same researchers (Thornton and Anderson 2006) presented a psycho-neuro-immunological model of cancer. This model, for the first time, hypothesized a causal linear relationship between the chain of events starting from stressors, psychological stress response that may lead to physiological stress response going on to immune changes and the disease processes. They could also incorporate many molecular mediators and moderators in the model.

Research in the last decade identified several mediators involved in the genetics of cancer that has led to successful drug discoveries. Based on these Ao P, et al., in 2010, proposed a non linear mathematical physical (stochastic dynamic) model of the genesis and progression cancer depicting the complexity of the interplay between these molecules.

Similar to these basic discoveries at molecular level that led to safer drugs to scavenge the cancer cells, the eastern yoga model offers a sound conceptual basis for psycho-oncological processes that leads to techniques of yoga with the potential of returning to normalcy.

Since the first published research article evaluating the benefits of a support group therapy (28) in 1981, several researchers have used techniques like mindfulness-based stress reduction (MBSR), progressive muscle relaxation, Tibetan yoga as alternative forms of mindful and proactive non-pharmacological methodologies in combination with conventional treatment and seen a plethora of benefits in cancer care. In 2011 Lin K-Y et al (29) published a meta-analysis of all published papers on

yoga in cancer and its effects on psychological and physical effects. Looking at the results of all these studies, it raises a question as to how all these studies could show similar results although they had used different practices ranging from only physical practices to meditative practices. The answer lies in the understanding that all these (asanas, prāṇayama, meditation etc) are only techniques to help the patient arrive at an internal mastery over the mind and prāṇa that helps in correcting the imbalances. As the premise for calling any practice 'yoga' is clarified in ancient Indian literature, researchers had the freedom to modify the intervention to suit the desired objectives.

Summary

The scriptural basis of the IAYTC has been discussed. The model incorporates all aspects of the personality with mind as the starting point with cancer as the end point of the process.

Limitations of the study

The study is a retrospective presentation of the steps that were followed over the years and not a prospective planned study to assess the validity and reliability of the model. Statistically acceptable check lists and scoring were not used during all group discussions and the format was semi structured. Not all members of the focused group met during all discussions and there were several meetings that were not documented. Statistical calculations of split half reliability were not planned.

Strengths

This is the first model that explains the role of imbalances at several levels of existence (physical body, prāṇa and mind).It forms the basis for self corrective techniques. RCTs that led to eight publications (7–14) provide the evidence . This offers new direction to research on cancer at subtler levels.

CONCLUSION

This study offers a model for holistic model for the eiopathogenesis of cancer as it incorporates the subtle components into the psycho-neuro-immunological model of cancer.

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