

Concept of Cancer Treatment Modalities - A Vision in Ayurveda

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Abstract- *Ayurveda is one of the oldest medical sciences. The knowledge of Ayurveda cannot limit in certain pages. Each system of medical science in the world has described the nature of Vikrti and Swasthya according to its own concept. The philosophy and hypothesis of each science differ from those of others and hence, each science described the fundamental elements of the universe in its own way. But the basic aim of the concept and fundamental principles of the science is to establish happiness in the human body. Acharya Sushruta has described very clear and detailed definition that is "The Doshashaving vitiated in any part of the body and afflicting the mamsaand produce a swelling, which is circular, fixed, slightly painful, big in size, broad based, slowly growing and does not suppurate". No specific definition available in Charaksamhita, but Acharya Charaka described Arbuda as a complication of Vata-Rakta and similarity between Arbuda and Shophya. Acharya Vagbhatanoted that Arbuda is relatively bigger than Granthi. Acharya Madhav while describing the definition of Arbudahe said the vitiated Doshaafflict the Mamsa and Rakta both to produce a swelling. Bhavaprakash and Sharangdhara are in agreement with Madhavkarma regarding the definition of Arbuda. Many diseases can be correlated with Arbuda but Cancer is a parallel disease for it. The signs and symptoms of Arbuda can be very well explained in modern terms.*

In various Ayurvedic classics the line of treatment of Arbuda is available but in scattered form, which can be divided into *Prophylactic* , *Palliative* ,*Curative*, *Supportive*, *Bhaishajyachikitsa*, *Shodhana karma*,*Samankarma*, *Shalyachikitsa*, *Shashtra karma*and *Anushastra karma*. In the present review article focus has been given tothe above aspects of cancer treatment modalities according to principles of Ayurveda.

KEY WORDS: Cancer, Palliative, Curative, Supportive, Bhaishajya Chikitsa, Shodhana karma

Conflict of interest: None.

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Introduction:

Cancer is emerging out as one of the major health problem in present scenario. According to WHO cancer report 2019, it is the second leading cause of death globally for an estimated 9.6 million deaths.¹ In India estimated number of patients living with

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the disease is around 2.25 million.² In India one in 10 deaths is related to cancer and a sizeable section of this huge population die in unrelieved pain and suffering.³ More than 70% of all cancer patients in India require palliative care for relief of pain, other symptoms and psychosocial distress.^{4,5} There is no cure to date for this disease but definitely a lot can be done to make the lives of these people meaningful and productive. With this idea the concept of palliative care was initiated.

Definition:

In Sushrutasamhita the term *Arbuda* has been described as,

गात्रप्रदेशेऽक्वचिदेवदोषाःसम्मूर्च्छितामांसमभिप्रदूष्य|
वृत्तंस्थिरंमन्दरुजंमहान्तमनल्पमूलंचिरवृद्ध्यपाकम्||१३||
कुर्वन्तिमांसोपचयंतुशोफंतमर्बुदंशास्तविदोवदन्ति|१४|(su. ni 11/13)

Vitiated Tridosh (Vata, Pitta and Kapha) derange *mamsa* and *raktadhatu* and form rounded, slows growing, fixed, slightly painful, large, deep seated, non-suppurating, fleshy mass, arising anywhere in the body.

A tumor is a new formation of cells of independent growth usually arranged atypically, which fulfils no useful function and has no typical termination.

Etiology:

According to *Sushruta*, the fundamental cause of major neoplasm is,

मुष्टिप्रहारादिभिरदितेऽङ्गेमांसंप्रदुष्टंप्रकरोतिशोफम्||१७||
अवेदनंस्निग्धमनन्यवर्णमपाकमश्मोपममप्रचाल्यम्|
प्रदुष्टमांसस्यनरस्यबाढमेतद्भवेन्मांसपरायणस्य||१८||
मांसार्बुदंत्वेतदसाध्यमुक्तं... |१९ (su.ni 11/17-19)

Any kind of external irritation (kshobha), it may be in the form of motion, heat or acrimony may cause cancer.⁶

The pathogens that affect all parts of the body. According to Sushruta the sixth layer of the skin as '*Rohini*,' (epithelium) and pathogenic injuries to this layer in muscular tissues and blood vessels caused by lifestyle errors, unhealthy foods, poor hygiene and bad habits results in the derangement of *doshas*, which leads to the manifestation of tumors. Ayurvedic classification of neoplasm depends upon various clinical symptoms in relation to tridosha.

- **Group I:** Diseases that can be named as clear malignancies, including *arbuda* and *granthi*, such as *mamsarbuda* (sarcomas) and *raktarbuda* (leukaemia), *mukharbuda* (oral cancer), and *asadhyavrana* (incurable or malignant ulcers).
- **Group II:** Diseases that can be considered as cancer or probable malignancies, such as ulcers and growths. Examples of these are *mamsajaoshtharoga* (growth of lips), *asadhyagalanda* (incurable thyroid tumour), *tridosajagulmas*,

asadhyaudararoga, (abdominal tumors like carcinomas of the stomach and liver or lymphomas).

- **Group III:** Diseases with the possibility of malignancy, such as visarpa (erysipelas), asadhya kamala (incurable jaundice), asadhyapradara (intractable dysmenorrhea or leukorrhea) and tridosajanadivrana (intractable sinusitis).

Palliative Care:

Palliative care is the active total care of patients whose disease is not or no more responsive to curative treatment. Palliative medicine includes clinical palliative care, education, and research that focus on the quality of life of patients with advanced disease and their families.⁷In palliative medicine, symptom control, and no longer prolongation of survival, takes a preponderant place to finally become the only goal to reach. Palliative care is not restricted to end-stage disease. It should be envisaged and organized as soon as is known that the disease is incurable. Thus, palliative and curative care are often complementary and are intricate over months or years to improve the quality of life of the patient. Palliative Medicine must be present from the diagnosis through the different evaluative stages of cancer patients, and is not just the care programs for terminally ill cancer patients. Surgery, radiotherapy and chemotherapy are used as specific palliation in some situations in order to improve quality of life, survival time or symptomatic control.

It includes compassionate communication; exploration of patient and family values and goals of care; expert attention to relief of suffering; management of pain, depression, delirium, and other symptoms; awareness of the manifestations of grief; and sensitivity to the concerns of bereaved survivors. The general principles of palliating most distressing symptoms in terminal cancer are:

1. To define and treat the underlying cause of symptom wherever possible and reasonable for the patient.
2. To relieve the symptom without adding new problems by way of side effects, interactive effects, social or financial burdens.
3. To consider whether a treatment will be worthwhile for the patient and his family bearing in mind his prognosis and adverse effects of invasive procedures.
4. To discuss all reasonable treatment options (including the decision of “no intervention”) with the patient and his family, allowing them to make the final decision as far as possible by themselves.

Concept of Home Care:

Caring for a patient with terminal illness at home is the preferred option for most people with a terminal illness.⁸ The benefits of palliative care at home include a sense of normality, choice, and comfort; and it is more cost-effective than hospital care. The responsibilities of a family caregiver may encompass some or all of the following: personal care (hygiene, feeding); domestic care (cleaning, meal preparation); auxiliary care (shopping, transportation); social care (informal counselling, emotional support, conversing); nursing care (administering medication, changing catheters); and planning care (establishing and coordinating support for the patient). Good palliative care can be delivered to patients at home by general physicians (supported by specialist palliative care teams) and community nurses, with access to an inpatient facility when required. Home care involves a considerable commitment on the part of family caregivers, and attention must be given to the caregiver's needs as well as those of the patient. Main Symptoms in a Terminal Cancer Patient In cancer patients, the symptoms may be caused by primary malignancy, as well as by treatment (surgery, radiotherapy or chemotherapy), debility conditions (anemia, COPD etc) and concurrent second disorders.⁹ A patient with advanced cancer may suffer from a plethora of symptoms involving multiple function systems.¹⁰ The ten most prevalent symptoms are pain, easy fatigue, weakness, anorexia, lack of energy, dry mouth, constipation, early satiety, dyspnea, and greater than 10% weight loss. Main symptoms in a terminal cancer patient have been tabulated in Table-1

Table. 1 Main Symptoms in a Terminal Cancer Patient ^{11, 12}

1.	General: Pain, cachexia, hiccups, lymphedema etc.
2.	Oral Cavity: Stomatitis/ mucositis, dry mouth
3.	GIT: Anorexia, vomiting, dysphagia, peptic ulcers, hematemesis, malaena, intestinal obstruction, ascites, constipation, diarrhea
4.	Respiratory symptoms: Dyspnoea, cough, hemoptysis, pleural effusion
5.	Hematological: Anemia, leucopenia, thrombocytopenia, neutropenia
6.	CNS: Headache, papilloedema, altered sensorium, sensory-motor deficit, diplopia, seizures

The patient may suffer from acute or chronic pain; which may be mild, moderate or severe. The prevalence of chronic pain is about 30-50% among patients with cancer who are undergoing active treatment for a solid tumour and 70-90% among those with advanced disease.¹³ The pain may be somatic, visceral or neuropathic in origin. Ayurveda has detailed description about pain and its management. Ayurveda has also elaborate description of classification drugs used for pain management. Duty and

responsibility of Ayurveda physician is to relieve the duhkhatamakvedanā and to maintain the sukhātmaḥ vedanā. ¹⁴In the cancer population, neuropathic pain is often related to compression, direct neoplastic invasion of the peripheral nerves or spinal cord, or to a neuropathy caused by chemotherapy. Various assessment tools to evaluate the severity of cancer pain include a 10-point visual analogue scale (VAS), Brief Pain Inventory (BPI), the satisfaction questionnaire and visual analogue scale quality of life (VASQOL).^{15, 16}

Management of cancer patients with Ayurveda.

The main principle of management of disease according to Ayurveda is Nidanaparivarjana i.e. avoidance of causative factors of the disease. The other types of treatments are Shodhana and Shamana. Panchakarma therapy is included in Shodhana whereas shamana is with the use of drugs for the management of disease. The use of Rasayana is also very beneficial to treat and sustain the healthy life. In the present article an effort has been made to focus on effectiveness management for cancer patients on the principle of principles of Ayurveda-

- Shamanachikitsa (treatment using Ayurvedic medicines orally)
- Shodhanachikitsa (detoxification through Panchakarma therapy)
- Rasayanachikitsa (immunotherapy, rejuvenation or Kayakalpa)
- Diet & life style management
- Satvavajaya (counseling)
- Daivavyapashrayachikitsa (divine therapy), Yoga & Pranayama are also suggested as per the need and condition of the patient.

1. Nidanaparivarjana:

Avoidance of causative factors i.e both Aaharaja and Viharajahetu is called as Nidanaparivarjana. Ayurveda advocates to live according our constitution, daily and seasonal rhythm and every once in a while a Panchkarma treatment – to prevent or restore the imbalance of Doshas and Dhatus – and a number of conditions can be relieved at an early stage. Use herbs prescribed by your Ayurvedic doctor; make sure you have enough exercise or walks in nature. Practice meditation and Yoga for mental and physical relaxation, listen to harmonious music is healing and calming the mind. Try to have more Sattvicfoods (vegetarian and less spicy), to balance both body and mind, respectively Doshas and Gunas. Sattvic foods consist of fresh, energizing foods as fresh fruits and (leafy) vegetables, milk, cereals, pure fruit juices, butter and fresh cheese, fresh nuts, seeds, sprouts, honey and herbal teas. No snacks or fast food and ready-to-eat meals. Avoid microwave ovens, limit meat consumption, especially red meat. Vitamin D has a protective effect on the development of tumors, fatty fish, eggs and vegetable oils are natural sources of vitamin D. Ayurveda has always turned to nature for inspiration to practice medicine and wisely uses natural resources.

2. Shodhana and Shamana-

ShodhanaChikita:

Purification of body with the help of five procedures namely Vamana, Virechana, Basti, Raktamokshana and Nasya is called as Shodhana. These procedures help to remove vitiated Doshas from the body and maintain equilibrium in them. Panchakarma is recommended to activate the body's self-healing ability, calm the Doshas and Gunas and remove excess Kapha and toxins from the body. Depending on the cause, site of the tumor and the strength of the patient, large parts of the body channels are cleansed and the Dhatus nourished and revitalized with herbs, diet and complementary therapies. After chemotherapy Pancha Karma will be beneficial for recovery of both body and mind. Ayurvedic medicine reaches beyond "the strict treatment of symptoms."

Aim of Panchakarma treatment is to cleanse & detoxify body, increase immunity & thus to restore health. In many Cancer patients, it helps to reduce sufferings, minimize side-effects of Chemotherapy & Radiotherapy. It also helps to prevent recurrence of Cancer.

Treatment (Chikitsa) of Cancer

- Mitigating all the three doshas (Tridosh – Shamak) according to dominance of doshas.
- Dhatvagni – Deepan: - Improving Metabolic activities (dhatvagni) especially Rasa – Rakta and Mansa dhatvagni.
- Controlling Dhatugataavastha :- (The nature of doshas of embedding in deeper & deeper tissues and vitiating them)
- Prevention of DhatupakaAvastha:- By Pittashamaka&Raktaprasadaka treatment.
- Rejuvenation to affected organ (Rasayana):- Depending upon strength of the patient and vitiated doshas.

Panchakarma (ShodhanaChikitsa) eliminates the vitiated doshas from the body.

Purvakarma (Pre procedures)-

1. Internal & External oleation (Snehana):- Snehana should be done for 3 to 7 days with plain or medicated clarified butter (ghee) or oil (Taila), till the symptoms of appropriate oral administration of oil / ghee (Snehapana) are seen.
2. Sudation (Swedana):- Sarvangasweda (Sudation to complete body) should be done either with plain water vapours or with vapours of herbal decoction, immediately after snehana.

Pradhana Karma (Main procedures)-

1. Inducing vomiting (*Vamana*) :

Appropriate Condition :- Kapha dominating symptoms in Cancer.

Appropriate Cancer site: - Cancer site situated above the Nabhiparadesh e.g. CA Lung, CA Breast.

2. Inducing Purgation (*Virechana*) :

Appropriate Condition :- Pitta dominating symptoms in Cancer.

Appropriate Cancer site: - Cancer site situated at the Nabhiparadesh e.g. CA Liver CA Pancreas.

3. Medicated enema (*Basti*) :

Appropriate Condition :- Vata dominating symptoms in Cancer.

Appropriate Cancer site: - CA of sites below the Nabhiparadesh e.g. CA Rectum.

4. Nasal Medication to eliminate the Doshas (*Nasya*) :

Appropriate Condition :- Kapha&Vata dominating symptoms in Cancer.

Appropriate Cancer site: - CA of sites above neck region -Urdhvajatrugata e.g. CA Brain.

5. Blood letting (*Raktamokshana*) :

Appropriate Condition :- Symptoms of vitiated Pitta &Rakta in Cancer.

Appropriate Cancer site:- CA of Blood dominating sites. e.g. CA Liver.

Pashchat Karma (Post procedures)-

Immediately after Panchakarma, Power of digestion (*Jatharagni*) becomes weak. To improve it gradually, the patient should follow special diet regime i.e. Sansarjana Karma. It lasts for 4 to 10 days. It contains –

- Thin rice gruel (*Peya*)
- Thick rice gruel (*Vilepi*)
- Plain bean soup (*AkrutaYusha*)
- Medicated bean soup (*KrutaYusha*)
- Plain non-veg soup (*AkrutaMansarasa*)
- Medicated non-veg soup (*KrutaMansarasa*)

Shamana Chikitsa:

To subside the symptoms of elevated Doshas with the help of drugs is called as Shamana. Many Ayurvedic plants and minerals are used for the treatment of Cancer. Extensive researches during the last 30 years have revealed much about the biology of cancer. Drugs used to treat most cancers are those that can block cell signaling,

including growth factor signaling (e.g. epidermal growth factor); prostaglandin production (e.g. COX-2); inflammation (e.g., inflammatory cytokines: NF-kappaB, TNF, IL-1, IL-6, chemokines); drug resistance gene products (e.g., multi-drug resistance); cell cycle proteins (e.g., cyclinD1 and cyclin E); angiogenesis (e.g., vascular endothelial growth factor); invasion (e.g., matrix metalloproteinases); antiapoptosis (e.g., bcl-2, bcl-X(L), XIAP, survivin, FLIP); and cellular proliferation (e.g., cmyc, AP-1, growth factors). Numerous reports have suggested that Ayurvedic plants and their components mediate their effects by modulating several of these recently identified therapeutic targets.¹⁷ shallaki has shown some promising effects in management of pain.¹⁸

Indigenous drugs mentioned in Ayurveda as Vedanahara (Parijat, Rasna, Nirgundi) and Medhya (Ashwagandha, Brahmi, Shankhpushpi) drug can play a better role in the management of pain and palliative care.¹⁹

Most of the synthetic chemotherapeutic agents available today are immunosuppressants, cytotoxic, and exert variety of side effects that are particularly evident in cancer chemotherapy. Botanical based immunomodulators are often employed as supportive or adjuvant therapy to overcome the undesired effects of cytotoxic chemotherapeutic agents and to restore normal health. Some drugs which are anti-cancerous are Haridra, Amlaki, Shatavari, Kalmegh, guduchi, Bhallataka, Ashwagandha, guggulu etc.

3. Rasayana:

Rasayana is an exclusive concept stated in Ayurveda. Rasayana is one among the eight clinical specialties of Classical Ayurveda (Ashtanga Ayurveda). It is not only a drug therapy but is a specialized procedure practiced in the form of rejuvenative recipes, dietary regimen and special health-promoting conduct and behavior (AcharaRasayana). Rasayana comprehends all the modalities of Health Care i.e., Preventive, Curative, Eliminative, Restorative, Behavioral, Pharmaceutical, Dietetic and so on. It is applicable to all ages from pediatrics to geriatrics. Mode of action of this therapy is specific in increasing the life span, significant improvement in quality of life and prevention of disease.

Benefits of Rasayana in cancer patients

- Easy Oral mode of drug administration.
- Reduces disease symptoms.
- Significantly improves patient's Quality of life.
- Helps in Tumor regression.
- Increases survival period in all types of cancer patients.
- Prevents the progression of disease.

- Significantly reduces the risk of relapse in cancer survivors.
- Shows very significant action in reducing the side effects of Chemotherapy/ Radiotherapy.

Rasayana is associated with multifaceted roles due to its Prevention, Promotion & Curative approaches against a wide range of obnoxious stimuli generated by both biosphere and ecosphere in the causation and progression of cancers. Its use protects the physiology and maintains the structural and functional integrity at molecular levels. Rasayanadravyas shows their action by its antioxidant potentials, enhancing Immunity, controlling metabolism and modify cellular signals complement their activities as Cancer preventing agents. Rasayanadravyas can be called as Biological Response Modifiers. Neuro-endocrine theory also known as Programmed cell death theory, postulates that all somatic cells have a built in biological clock, or a genetically controlled life span, after which they would die, no matter how favorable circumstances are. Immunological theory states that mutated cells stimulate immunological reactions within the organism and these reactions themselves degrade and eventually destroy the organism. Evidence from these theories of ageing supports the potential role of Rasayana, as it shows the multiple actions on different systems of the body by modulating the Psycho-Neuroendocrine-Immune systems.^{20, 21}

4. Diet & life style management-

Ayurveda considers psychotherapy as a meaningful part of the treatment. Because health can be attained only through balancing body, mind and spirit. When radiation or chemotherapy is the only possible way, the body is severely depleted. There are a few Ayurvedic remedies to support the body in this process; preserve your strength, you need all your energy in your recovery process. Limit the amount of proteins in your diet in order to slow down tumor growth. For a large part tumors contain proteins. In case of a loss of appetite, eat a number of small meals instead of three large meals. Drink a little bit more before and after meals. Avoid cold foods as they suppress digestive fire. If solid foods cause problems, replace them with nutritious soups. Use herbs to boost the immune system. In case of nausea use ginger. Choose predominantly plant based diets rich in fruits and vegetables. Restrict the intake of red-meat (beef, pork etc.) and preserved meat. Eat satvik and biologically fresh fruits and vegetables. Say no to snacks and fast food. Reduce the use of microwave oven for cooking.²²

5. Satvavajaya (couselling):

Stress and anxiety go hand in hand in cancer patients. Typically, people approach problems in one of two ways-

1. Actively working on them
2. Avoiding them

In general, active coping works better and is healthier.

Active ways to manage stress :²³

1. Take break from news about pandemic on social media.
2. Stay in touch with people who can provide emotional and other support.
3. Take time to do relaxing activities you enjoy like cooking, yoga etc.
4. Focus on nutritious diet

6. Daivavyapashrayachikitsa (divine therapy), Yoga & Pranayama :

Yoga chikitsa is virtually as old as Yoga itself, indeed the return of mind that feels separated from the universe which exists represents the first Yoga therapy. Chikitsa could be termed as Man's first attempt at until understanding of mind - emotions- physical distress and oldest holistic concept and therapy in the world. Yoga is basically preventive life sciences and helping the patients understand their condition finding the root causes of the problem and creating a healthy opportunity for them to change themselves. The chronic diseases are spreading very fast as epidemic putting a break for this epidemic is today's need. This can be done by health promotion through healthy diet and of simple, cheap and cost effective measures, proper management and care of the patient. Yoga, Meditation and Pranayam are century old, time tested processes, these are known to relax mind and energize the body.

Meditation- Meditation is an art of doing nothing with eyes closed. Several techniques are available to make one reach meditative state. Meditation can play a useful role for cancer patients. It can relieve the stress and physical and emotional pain. Meditation can be useful to some people in dealing with side effects of treatment and in overcoming the sense of loss of control and to promote health and reduce the risk of recurrence. ²⁴ Meditation has been used to great advantage in caring for terminally ill and dying patients in hospice settings and at home. Healthy persons at higher genetic risk of cancer also may be drawn to meditation to reduce environmental and lifestyle risk factors and to control anxiety and stress. These measures change the hopeless and helpless attitude to the active fighting spirit. They reduce the stress associated with the diagnosis as well as treatment of cancer. By reducing the stress they may alter the treatment outcome. Meditation can lead to prevention as well as progression of cancer.

Pranayama – Pranayama is very beneficial in this case for cancer patients as it combines the 'prana' or the breath, with 'yama' which means the extension or control and this is crucial practice in yoga. This is the science of breathing and involves paying close attention to the way you breathe i.e. inhalation, exhalation and retention or holding of breath. Especially during rechaka which involves conscious effort with the help of cerebral cortex of brain. In some researches it was proven Sudarshankriya and Pranayam are highlighted to induce relaxation, increase antioxidant defense and NK cell in the body. Sudarshankriya and Pranayam may have a preventive role against cancer.

Both may be effective as secondary preventive measures after curative treatment of cancer and in metastatic cancer, Sudarshankriya and Pranayam may delay progression of cancer improve survival and quality of life.²⁵

Conclusion:

A chronic and mostly incurable disease like cancer not only disturbs the body but also affects the mind. When someone is blocked in his development, he may become frustrated. This will imbalance the mind and leads to all kinds of symptoms like hyperactivity, lethargy, indifference or even depression. The last three are mental attitudes and Ayurveda refers to those as “Tamasika”, the negative aspect of Tamas.

Ayurveda stimulates the self-healing abilities of the body. It has a wide range of therapies and herbs to purify and support body tissues for natural recovery. The starting point is balancing the Tridosha's and Triguna's. Ayurveda can determine subtle disturbances in a very early stage of this disease. Even before it manifests itself, Ayurveda can already establish disturbances in the balance of mind and body. Both in this first stage and in the following stages, Ayurveda can help a patient to recover and prevent serious chronic diseases. In all the stages, even when a chronic disease like cancer has been diagnosed, Ayurveda can provide extensive knowledge of herbs and treatment strategies. During chemotherapy and / or radiotherapy, Ayurveda can help to reduce the side-effects of the treatment as well as assist the body in its recovery process.

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