

## CRITICAL REVIEW ON AYURVEDIC MANAGEMENT OF CHEMOTHERAPY INDUCED SIDE EFFECTS IN CANCER

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### ABSTRACT

Ayurveda, the oldest Indian indigenous medicine system of plant drugs is known from very early times to prevent or cure various tumors using these natural drugs. Cancer is a name given to a large group of diseases, all of which have one thing common, cells that are growing out of control. The treatment of cancer has increased in complexity; patient receives adjuvant chemotherapy and radiotherapy which increases the duration and toxicity of treatment. The modern cancer treatment is burdened by drug-induced toxic side effects. Hence, people are hoping cure of disease from the complementary and alternative medicine system like Ayurveda. Chemotherapy as *Visha* (highly toxic) creates the tremendous *Rukshata* (dryness) in the body. The basic pathology behind the side effect of systemic chemotherapy is the vitiation of *Tridosha* mainly *Vata*. Ayurvedic herb contains multiple active principles that benefits and lowering the risks of adverse effects and avoids the need for supplemental therapy to manage cancer cachexia.

**Keywords:** Cancer, Chemotherapy, *Panchakarma*

### INTRODUCTION

In modern science Extensive research has produced many new healing methods for the management of cancer. The treatment of cancer has increased in complexity. Surgical procedures are often less extensive than in proceeding decades. However to limit the extent of surgery, the patient receives adjuvant chemotherapy and radiotherapy which increases the duration and toxicity of treatment. In cancer management health related quality of life is a multi-dimensional construct that includes the subjective appraisal of the patient's physical and mental well-being.

So this is our endeavor to handle this suffering. Multimodal therapy, combining two or more treatment approach is now standard for many curable cancers. In Ayurveda, Ayurvedic herbs and *Panchkarma*, it is a group of unique therapeutic procedures having preventive, prophylactic, rejuvenating and curative properties.

#### Materials and Methods:

Review Ayurvedic and modern literature for pathogenesis and treatments of cancer.

Studies conducted at All Institute of Medical Sci-

ences, Delhi, have revealed that herbal remedies reduce side effects of chemotherapy. Herbal preparations for chemotherapy rehabilitation will also include spices such as *Pippali* (*Piper nigrum*), *Tulsi* (*Ocimum sanctum*), *Brahmi* (*Bacopa monnieri*), *Guggul* (*Commiphora wightii*), *Turmeric* (*Curcuma longa*), *Amla* (*Emblica officinalis*) etc. Chemotherapy as *Visha* (highly toxic) creates the tremendous *Rukshata* (dryness) in the body. *Panchakarma*; *Basti Karma* – A transmucosal rectal route is such a therapy that is applicable in all the disorder of *Vata*. According to *Sushruta*, it can also be used in *Kaphaja* and *Pittaja* disorders by using different ingredients<sup>1</sup>. *Vata* is a controller and regulator of other two, *Doshas*, *Dhatu*s and *Malas* and also all the body activities. *Basti* is always applicable to those who are emaciated due to overwork, physical exercise, weight lifting, wayfaring journey on vehicles and indulgence in women as well as debilitated person and those afflicted with *Vata* disorders. The same *Vata Dosh*a has very important role in the pathology of side effects of chemotherapy like anorexia, nausea, vomiting, diarrhoea, fatigue, etc. *Ashtanga Samgrahakara*, emphasized on regular administration of the *Basti* and it can be administered at all times and in all seasons just as *Madhu Tailika Basti*. *Vagbhatta* has mentioned that *Basti* improves *Varna* (skin luster) and *Bala* (power). The *Basti* is promotive of strength without any demand of strict regimen of diet, causes easy elimination of *Mala* (Feaces) and *Mutra* (Urine)<sup>2</sup>.

### **Chemotherapy and its side effects<sup>3</sup>**

Chemotherapy is the use of cytotoxic agents to destroy cancer cells. Chemotherapy dates back to the 1500s, when heavy metals were used systemically to treat cancers, and severe toxicity and limited cure were reported. Chemotherapy remains the primary treatment for some malignancies and an adjunct to other treatment modalities (surgery, radiation, and immunotherapy). Unlike surgery and radiation, chemotherapy is distinguished by its systemic effects. Most of the drugs are transported by the bloodstream; most do not cross the blood–brain barrier and therefore cannot reach the central nervous

system. The usefulness of cancer chemotherapy is often limited by toxic reactions.

1. Haematological side effects—It is the most dangerous form of toxicity for many of the antineoplastic drugs used in clinical practice. Its most common form is neutropenia, with an attendant high risk of infection, although thrombocytopenia and bleeding may also occur and can be life threatening.
2. Gastrointestinal side effects—Anorexia, nausea and vomiting are among the most common and distressing acute reactions to a wide variety of cancer chemotherapeutic agents. From the point of view of most patients, nausea and vomiting are the most important side effects of cancer chemotherapy.
3. Immunosuppressant—Most of the commonly used antineoplastic agents are capable of suppressing cellular and humeral immunity. The impact of immunosuppressant on the natural history of cancer is unpredictable, however; it may be necessary part of the antineoplastic efficacy of some drugs.
4. Dermatological side effects—Skin necrosis may result from the extravasations of certain vesicant drugs during intravenous therapy.
5. Vascular and hypersensitivity reactions—The most serious form of hypersensitivity seen with chemotherapy is anaphylaxis. Anaphylaxis is most commonly seen with L-asparaginase.
6. Hepatic side effects—It is an uncommon problem in cancer chemotherapy, but when occurs, it may be serious. E.g. cirrhosis with methotrexate.
7. Pancreatic side effects—Acute pancreatitis is a rare complication of cancer chemotherapy, but it has been described with L-asparaginase, corticosteroids and cytarabine.
8. Pulmonary side effects—A variety of drugs may cause profound pulmonary disturbances, especially in patients who have received prior pulmonary irradiation. E.g. Pulmonary fibrosis with bleomycin.
9. Cardiac side effects—Angina, left ventricular dysfunction and a variety of other less typical

cardiac abnormalities may occur. E.g. doxorubicin.

10. Genitourinary side effects–Haemorrhagic cystitis occurs in about 10% of patients treated with cyclophosphamide.
11. Neurotoxicity–Peripheral neuropathies from vinca alkaloids and taxanes, ataxia with 5-FU, ototoxicity from cisplatin are some major forms of Neurotoxicity.

#### Result:

Multimodal therapy, combining two or more treatment approach is now standard for many curable cancers. In Ayurveda *Panchkarma* is a group of unique therapeutic procedures having preventive, promotive, prophylactic, rejuvenating and curative properties.

## DISCUSSION

Characteristics of chemotherapeutic agents can be understood in light of concept of *Visha Dravyas*. *Aacharya Sushruta* has classified the *Visha Dravyas* and thoroughly described their characteristics. On the basis of those characteristics, it can be correlate with the characteristics of chemotherapeutic agents to that of *Visha Dravya*<sup>4</sup>.

- *Krutrima*- Artificially prepared CT (chemotherapy) agents.
- *Sadyovyapadayet*– Immediately shows its ill-effect i.e. acute side effects.
- *Dehatasheshamyadanirgatam* - Impaired excretion of CT agents from the body.
- *Varshagananubandhi* – Chronic Toxicity.

Ayurveda are made of multiple herbs possessing great potential for a cancer cure; scientifically these formulations work on multiple biochemical pathways and influence different organ systems all together and nourish the body as a whole by supporting body's defence systems. Herbs help total healing, reduces the side effects and cancer-associated complications. *Andrographis Paniculata*, *Annona Atemoya*, *Phyllanthus Niruri*, *Piper Longum*, *Podophyllum hexandrum*, *Tinospora cordifolia*, *Semecarpus Anacardium*, *Vitis Vinifera*,

*Baliospermum Montanum*, *Madhuca Indica*, *Pandanus Odoratissimum*, *Pterospermum Acerifolium*, *Raphanus Sativus*, *Barleria Prionitis*, *Prosopis Cineraria*, *Amorphopallus Campanulatus*, *Oxoxylum Indicum*, *Basella Rubra*, *Flacourtia Romantchi*, *Moringa Oleifera*, *Ficus Bengalensis*, *Curcuma Domestica*, *Allium Sativum*, *Calotropis Gigantean*, *Datura Metel*, *Hygrophila Spinosa*, *Juniperus Indica*, *Moringa Oleifera*, *Nigella Sativa*, *Picrorrhiza Kurroa*, *Rubia Cordifolia*, etc. are various plants having scientific evidence of anticancer property<sup>5</sup>.

*Basti karma* and its active principles that benefits and lowering the risks of adverse effects; and avoids the need for supplemental therapy to manage cancer cachexia. Chemotherapy agents stimulate the melanocortin system in hypothalamus leads to Anorexia. Previously it has been proved that the enteric nervous system (ENS) play an important role in mechanism of action of *Basti*. It is the intrinsic nervous system of the GI tract which controls the gut movement, fluid exchange between the gut & its lumen, and local blood flow. The ENS has extensive, two way connections with the central nervous system (CNS), and works in concert with the CNS to control the digestive system. All function of body can have controlled by *Basti*, all physiological functions are restored and total body equilibrium is achieved. Hence, *Basti* is called as “*Sarvarthakari*.” There are many types of *Basti* is depending on the amount of the drug, the quality of the substance and the expected action of the *Basti*<sup>6</sup>.

## CONCLUSION

Ayurvedic herbs are having medicinal properties which will acts simultaneously by producing therapeutic benefits & lowering the risk of toxic effects along with managing cachexia without supplementary medication.

Hence it is now high time to raise awareness & implementation of Ayurvedic medicines & *Panchakarma* therapies to treat cancer & manage its complications by integrated approach.

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