

CANCER - AN AYURVEDIC PERSPECTIVE

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ABSTRACT

Changed dietary habit, pollution, industrialization, sedentary life style and stress, are the factors responsible for development of so many fatal diseases now a days. Cancer is one of the most dreadful amongst them. Many efforts have been taken but success is still far, that's why terror of disease is bigger than the disease. Cancer is not new term to *Ayurveda*. Our great trio (*Charak Samhita*, *Sushrut Samhita*, *Austang Samhita*) had already described about the disease. Acharya Sushrut has mentioned the *granthi* and *arbuda* which has resemblances with the observations and clinical entities of cancer. The descriptions regarding this disease are available in a scattered form; there is a need to compile this information collectively in systemic manner that may help us in understanding the etiology, pathology and the management of the disease in a better way. It is evident that early *Ayurvedic* physicians had a good understanding of etiology, clinical manifestations, symptoms, classifications, malignant and benign nature of tumors, metastasis, recurrence, diagnosis, prognosis and treatment. The present paper expounds those diseases with possible interpretation in modern system of medicine on the other hand possible *Ayurvedic* which is described in classical text.

Keywords: Ayurveda, *Granthi*, *Arbuda*, cancer and Ayurvedic management.

INTRODUCTION

Cancer is one of the most dreaded diseases of the 20th century and spreading further with continuance and increasing incidence in 21st century. In the United States, as the leading cause of death, it accounts for 25% of all the deaths in humans presently. It is considered as an adversary of modernization and advanced pattern of socio-cultural life dominated by west-

ern medicine. Multidisciplinary scientific investigations are making best efforts to combat this disease, but the sure-shot, perfect cure is yet to be brought into world medicine. Recently, a greater emphasis has been given towards the researches on complementary and alternative medicine that deals with cancer management. Ayurveda, a traditional Indian medicine of plant

drugs has been successful from very early times in using these natural drugs and preventing or suppressing various tumours using various lines of treatment. The broad aim of this article is to provide a general outline on descriptions of cancers and their management from an Ayurvedic practitioners' perspective underlying its scientific principles involved in treating these conditions with the use of natural products.

1.1. Ayurvedic concept of cancer

*Charaka*¹ and *Sushruta*² *samhitas*, two well-known Ayurvedic classics, describe cancer as inflammatory or non-inflammatory swelling and mention them as either *Granthi* (minor neoplasm) or *Arbuda* (major neoplasm). Ayurvedic literature defines three body-control systems, viz., the nervous system (*Vata* or air), the venous system (*Pitta* or fire), and the arterial system (*Kapha* or water) which mutually coordinate to perform the normal function of the body. In benign neoplasm (*Vataja*, *Pittaja* or *Kaphaja*) one or two of the three bodily systems are out of control and is not too harmful because the body is still trying to coordinate among these systems. Malignant tumours (*Tridosaja*) are very harmful because all the three major bodily systems lose mutual coordination and thus cannot prevent tissue damage, resulting in a deadly morbid condition².

1.2. Fundamental classification

Ayurvedic classification of neoplasm depends on various clinical symptoms in relation to *Tri-doshas*.

Group I: Diseases that can be named as clear malignancy, which includes *Arbuda* and *Granthi*, e.g. *Mamsarbuda* (melanoma) and *Raktarbuda* (leukaemia), *Mukharbuda* (oral cancer), etc.

Group II: Diseases that can be considered as cancer, such as incurable ulcers with e.g. *tridosaj gulmas* (abdominal tumours like carcinomas of the stomach and liver or lymphomas).

Group III: Diseases with the possibility of malignancy, e.g. *Visarpa* (erysipelas), *Asadhya Kamala* (incurable jaundice) and *Nadi Vrana* (sinusitis)³⁻⁴.

1.3. Etiology

According to *Sushruta*, the fundamental cause of major neoplasm is the pathogens that affect all parts of the body. He called 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 tumours^{2, 5}. Excess of water or fat in the corpus of the tumour and the stability and rigid confinement of the *doshas* in a particular place were described as reasons for the non-infectious and non-suppurative nature of these abnormal growths^{2, 6}. Cancer in each person differs according to the person's exposure to *pathogens* and genetic constitutions which make each of them to react differently to the same diet. The factors responsible for the vitiation of *doshas* are discussed here⁷.

Vata aggravating factors: excessive intake of bitter, pungent, astringent, dry foods and stressful conditions.

- a. *Pitta aggravating factors*: excessive intake of sour, salty, fried foods and excessive anger.
- b. *Kapha aggravating factors*: excessive intake of sweet, oily food and sedentary nature.
- c. *Rakta aggravating factors*: excessive intake of acid or alkali containing foods. Fried and roasted foods, alcoholic beverages, sour fruits are some examples. Excessive anger or severe emotional upset, sunbathing or working under scorching sun or near fire and hot conditions, etc. are some other causes¹.
- d. *Mamsa aggravating factors*: excessive use of exudative foods like meat, fish, yoghurt, milk and cream. Behaviours leading to exudation like sleeping during the day and over-eating are some of the causes for pathogens invading the fatty tissues¹.
- e. *Medo aggravating factors*: excessive intake of oily foods, sweets, alcohol and lazy attitude^{1,2}.

1.4. Pathogenesis of tumours

According to Ayurvedic principles, the disease cannot be named on its own because it differs between persons in terms of illness, clinical presentation and also the treatment required⁴. Thus, pathogenesis in Ayurveda is explained on the basis of *Tridoshas*. *Agni* or *Pitta*, which is present in each and every cell, is responsible for digestion and metabolism in human body. The decrease in *Agni* is inversely proportional to the related tissue and therefore in *arbuda*, the decreased state of *dhatwagni* (deranged metabolism) will result in excessive tissue growth. *Vata* can be correlated with the anabolic phase of growth whereas *kapha* to the catabolic phase. Cancer originates due to a metabolic crisis, i.e. aggravation of *vata* forces and suppression of *kapha* forces, both interacting with one another resulting in proliferation. However, the abnormal cancerous growth at a specific organ (*Ekadesavridhi*) is managed by compensation from other parts of the body (*Anyasthaniyakshaya*), e.g. body weight loss (cachexia)⁷. *Sushruta* has proposed six stages in the pathogenesis of all diseases but his concept suits more to the pathology of the tumour than pathogenesis itself.

1. *Sanchaya*: early stages of localized neoplastic changes.
2. *Prakopa*: transformation of primary growths into metastatic tumours.
3. *Prasara*: metastasis.
4. *Sthana samsraya*: complete metastasis and secondary growth.
5. *Vyakti*: clinical signs and symptoms are expressed.
6. *Bheda*: the stage where differentiation of growth occurs on the basis of histopathology⁷.

Management

Based on the predominance of the vitiated *dosha* involved, tumors have been classified in to the six major categories, i.e. *Vataja*, *Pittaja*, *Kaphaja*, *Raktaja*, *Mamsaja* and *Medoja* and treatment modalities are recommended for

each type of tumor categorically, in *Ayurveda*. In general practice, the following principles are adopted for the management of *arbuda*.

- i. Poultrice and sudation
- ii. Bloodletting (*Rakta Mokshan*)
- iii. Cauterization and use of Caustics
- iv. Internal medication and
- v. Surgery

i. Poultrice and Sudation

Kushmanda (*Benincasa cerifera*), *ervaruka* (*Cucumis utilissimus*), *narikela* (*Cocos nucifera*), *priyala* (*Buchanania lanzan spreng*) and *eranda* (*Ricinus communis*) seeds are boiled with milk, water and ghee and mixed with oil, is applied in *Vataja* tumor⁸. *Moringa Pterygosperma* (*shigru*) and the juice of meat (*mamsa rasa*) are boiled and steam is to be passed through a tube over the tumor⁹. In *Paittika* tumor, mild fomentation and poultices are applied along with purgation. After rubbing the part with the leaves of *udumbara* (*Ficus glomerata Linn.*) or other leaves having rough surface, the paste of finely powdered *sarjarasa* (*Viteria indica*), *priyangu* (*Callicarpa macrophylla*), *rakta chandana* (*Pterocarpus santalinus*), *arjuna* (*Terminalia Arjuna*) and *yashti Madhu* (*Glycyrrhiza glabra*) mixed with honey, is sprinkled over the tumor¹¹. Local application of various medicated pastes are used after purification (*samsodhan chikitsa*), especially after emesis. The paste of the drugs used for emesis and purgation may also be applied to arrest the *kaphaja* tumor. Purification or detoxification therapies in cancer patients as pretherapy to conventional line of treatment have been studied^{12, 13}. The study showed that these procedures increased body weight; improved serum immunoglobulin's, increased haemoglobin levels and normalized liver functions. It was found helpful in minimizing the adverse effects of chemotherapeutic agents. Purification therapies are advocated for the management of tumors based on the involvement of *Dosha*. Oleation (*Snehana*) is advised for *Vata Dosh*, purgation (*virechana*) is for *Pitta Dosh* and emesis (*Vamana*) is ad-

vised for *Kapha Dosha*. Caustics (*Kshara*) in a cow's urine are also prescribed as a local application for *Kaphaja* tumor after the bloodletting procedure. Another medicated poultice made up of boiled meet has also described as effective¹⁰.

(ii) Bloodletting (*Rakta Mokshan*)

Bloodletting again and again is indicated after purification in the management of *vataja*, *pittaja*, *kaphaja* and *Medaja* tumors. The use of cow's horn, non poisons leaches and gourd (*Lagenaria vulgaris*) for bloodletting has been advised in *vataja*, *pittaja* and *kaphaja* tumors respectively. In *Medaja* tumors bloodletting has been advised after making an incision over the tumor. Bloodletting improves the collateral circulation of affected parts and cleanses the microcirculatory channels directly by removing toxic materials from the body there by helps to reduce the inflammation and to arrest the further growth of the tumor¹⁴.

(iii) Cauterization and use of Caustics

(*Agnikarma* and *Ksharkarma*) Thermal cauterization (*agnikarma*) and application of caustics (*Kshar Karma*) is used alone or in combination with surgery for the management of *kaphaja* tumors, *medaja* tumors and tumors that do not respond to medical management. The recurrence of tumor after surgical excision was recognized by *Susruta*. His idea was that the even the last particle of *dosha* of a tumor left over would lead to a fresh growth and bring death just like the last spark of an unextinguished fire. A radical excision was advised to avoid recurrence. To prevent the recurrence of the disease therapeutic cautery and the application of caustics have been advised especially after surgery to achieve the complete cure.

(iv) Internal Medicaments

Several studies have been conducted in past 20 years to evaluate the effect of *Ayurvedic* drugs in the management of tumor and the results of all the studies found significant. Study revealed that *Ayurvedic* drugs not only prevent

the progress of the disease but induce apoptosis (cell death) too. *Andrographis paniculata* (*kalmegh*) is used as wonder drug in the traditional *Ayurvedic* system in India for multiple clinical applications. Andrographolide, a major constituent from the leaves of the *Andrographis*, inhibited the proliferation of different tumor cell lines in various in-vitro studies. The compound exhibited direct anticancer activity on cancer cells by cell cycle arrest at G0/G1 phase through induction of cell cycle inhibitory portion P 27 and decreased expression of cyclin dependent Kinase 4 (CDK4) (Rajgopal *et al.*, 2003). *Aegle marmelos* (*bilwa*) found to have strong anti cancer activity against thyroid cancer (Lampronti *et al.*, 2003). *Centella asiatica* (*mandukparni*) protects from cancer by enhancing immune functions of the body (Punturee *et al.*, 2007). The extract of whole plant has shown strong anti cancer activity (Yu *et al.*, 2006). Curcumin sulphate, a major constituent from *Curcuma longa* (*haridra*) induces apoptosis in various cancer cell types including skin, colon, stomach, duodenum and ovary (Lee *et al.*, 2002). *Aloe vera* (*ghrit Kumari*) is found to inhibit metastasis of the tumor (Lissone *et al.*, 1998). Lectin from *Aloe*, when injected directly into tumors activated the immune system to attack the cancer (Akev *et al.*, 2007). Withaferin A and withanolide D found in *Withania somnifera* (*ashwagandha*) was reported to inhibit growth of cancer (Mathur *et al.*, 2006). Studies have revealed that *Withania somnifera* enhances the therapeutic effect of radiotherapy. *Ocimum sanctum* (*Tulsi*) considered sacred by Hindus, is reported to have anti tumor activity. Beneficial effects of the extract of this plant have also been reported in radio therapy of human cancer (Ganasoundari *et al.*, 1998). *Plumbago zeylanica* (*chitraka*) modulates cellular proliferation, carcinogenesis and radio resistance, all known to be regulated by activation of the transcription factor NF-kB, suggesting plumbagin might affect the NF-kB activation pathway (Santosh *et al.*, 2006). The fruits of the *Semecarpus anacardium* (*bhalla-taka*) are reported to possess good anti-

inflammatory agent and effective in various types of cancer (Chitinis *et al.*, 1980). Although the exact mechanisms are still under investigation, research has demonstrated *Glycyrrhiza glabra* (*Yashtimadhu*) inhibit abnormal cell proliferation, as well as tumor formation and growth in the breast (Shiota *et al.*, 1999). Administration of polysaccharide fraction from *Tinospora cordifolia* (*guduchi*) was found to be very effective in reducing the metastatic potential of B16F-10 melanoma cells (Leyon and Kuttan, 2004). *Tinospora cordifolia* is also reported to have immunostimulatory properties (Mathew and Kuttan, 1999). Tannins and triterpenes found in *Terminalia arjuna* (*arjuna*) are reported to show antigenotoxic or antimutagenic effects (Scassellati-Sforzolini *et al.*, 1999). The extract of *Taxus brevifolia* contains paclitaxel, commonly known by the name of taxol, a potent anti cancer drug used to treat ovarian, breast, lung cancer and Kaposi's sarcoma (Luck and Roche, 2002 and Ghamande *et al.*, 2003). Apart from *Loknath Rasa* (*brihat*), *Rudra Rasa* (*arbudhara*), *Tamra Bhasm*, *Manashila* are the common *Ayurvedic* formulations prescribed for the treatment of *arbuda* in *Ayurveda*.

(v) Surgery-

If a tumor does not respond to a proper medical management it should be treated surgically. The main surgical treatments of tumors are excision and excision with scraping (*lek-hana*). After complete removal of the mass the area is cauterized to achieve a complete cure. Cleansing of the wound should be undertaken after excision of the tumor using the decoction of *aparajita* (*Clitorea teratea*), *Jati* (*Jasminum grandiflorum*) and *Karveera* (*Neium odorum*). The oil prepared from *bharangi* (*clerodendrum serratum*), *Vidanga* (*Embelia ribes*) and the paste of *Triphala* (*Terminalia Chebula*, *Terminalia bellerica*, *Emblica officinalis*) may enhance the healing of wounds¹⁵. Suppurated wounds may be treated according to the measures mentioned for the management of infected ulcers (*Dushta Vrana*).

CONCLUSION

From above description it is evident that early *Ayurvedic* physician had a good understanding of etiology, clinical manifestations, symptoms, classification, malignant and benign nature of tumors, metastasis, recurrence, diagnosis, prognosis and treatment. It is remarkable that the basic information is fairly consistent with the current knowledge in these areas given the technology available 800 years ago. The physicians also recognized the facts that malignant tumors must be completely and extensively excised so that not a trace of tumor is left in the body for even a trace can grow back to a tumor. Various treatment methods, both local and systemic, and various herbal formulations found useful in many tumors are presented. The review has shown that *Ayurvedic* therapies are useful as an adjuvant to conventional therapy.

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