

CANCER IN AYURVEDA

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ABSTARCT

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 them. The descriptions regarding this disease are available in a scattered form under the context of various diseases in *Ayurveda*. 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. So many drugs have been mentioned for the management of this condition. If evaluate methodically they may generate some curative or supportive remedy for the sufferers of this disease. Keeping this in view, the available information on *Ayurvedic* management of the benign growths, cyst and malignant tumors have been collected and reviewed. 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. It is remarkable that the basic information is fairly consistent with the current knowledge in these areas given the technology available 800 years ago. Various formulations (e.g. paclitaxel, curcumin sulfate, vincristin, vinblastin) being used frequently in conventional medicine for management of tumor, are originally derived from herbs. The review has shown that the *Ayurvedic* therapies are useful as an adjuvant to conventional chemotherapy.

INTRODUCTION

Cancer is on the rise in India with an estimated 535,767 people dying of the disease in the year 2011. As per the latest estimates of Indian Council of Medical Research (ICMR), the prevalence of Cancer in the country is the about 27 lakh. The incidence of new cancer cases every year in the country is about 11 lakh and about 5 lakh people die every year from the ailment. In spite of the progress in the science of medicine, the understanding of the cancerous condition is still not complete. Although the knowledge has expanded considerably about the etiology and treatments, the exact cause of the disease and effective management of cancer in general is still on unresolved mystery to the scientists. Cancer has been recognized and characterized by the science of Ayurveda.

Historical Perspective

The identification and description of malignant diseases are available in the literature of ancient India and *Ayurveda*. The earliest and for most records are cited in *Atharva Veda* (2200 B.C.). During this period the disease was probably described under the heading of *apachi* or *apachit*, which refers to the present knowledge of various types of lymph node swellings. In later period, Susruta (800 B.C.), in his classic "*Sushrut Samhita*" described this *apachi* as multiple lymph node swellings that may arise at different places such as the neck, axilla and groin. In classical texts of *Ayurveda*- "*arbuda* – a type of swelling" has been described extensively under the chapter *Apachi*. According to Susruta, Swellings, which are globular, fixed, large and deeply-seated, slow growing, little painful, non suppurative and appear like a fleshy mass, called *arbuda*. It may arise in any part of the body due to derangement of muscle vitiated by *tridosha*. The word *arbuda* has been derived from the root "Arb" with Suffix "Ena" along with augmentation of "Nd" which means "to destroy". Grammatically, it denotes the fleshy out growths. During the *vedic* period *arbuda* was considered as a serpent like demon that was conquered by "*Lord Indra*". Whereas the literary meaning of *arbuda* is a lump or a mass or a polyp.

Research Article

The ancient Indian Clinicians were well aware of metastasis of the disease which is termed as *adhyarbuda* and *dwirarbuda* in *Ayurveda*. When a tumor arises on pre existing site or near the primary tumor, it is called *adhyarbuda*. Distal spread of tumor is known as *dwirarbuda*. From all the above descriptions it is clear that *arbuda* is a disease similar to the tumor (cancer) described in conventional medicine.

Causes of Tumour (Etiology)

Human body is made up of *tridosha* (*vata*, *pitta* and *kapha*), it is believed that equilibrium of *vata*, *pitta* and *kapha* ensure good health. If any of the factors of *tridosha* gets vitiated due to the changed dietary habit and life style, body become diseased. Excessive use of meat is considered to precipitate the formation of tumor described in *Sushrut Samhita*, *musthi prahar* (trauma) is another important factor for development of *mamsarbuda* (Susruta, 2005). *Vagbhata* (600 A.D.) emphasizes that factors responsible for excessive formation of muscle and soft tissue (*mams dhatu*) may lead to the development of tumors and other pathological conditions. The genetic cause for the manifestation of cancer is also well documented in *Ayurveda*. Unwholesome diet (*mithya ahara*) and unwholesome regimen (*mithya vihar*) are the main reasons behind the rise in incidence of cancer (Sahu and Mishra 2004).

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) Poulitice and sudation
- (ii) Bloodletting (*rakta mokshan*)
- (iii) Cauterization and use of Caustics
- (iv) Internal medication and
- (v) Surgery

(i) Poulitice 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* tumor (Susruta, 2005). *Moringa pterygosperma* (*shigru*) and the juice of meat (*mamsa rasa*) are boiled and steam is to be passed through a tube over the tumor (Chakrapanidatta, 2007). 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 tumor (Bhisag Ratna and Gobind Das Ji, 2006). 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 prêtherapy to conventional line of treatment has been studied (Parmar, 1983 and Singh, 1989). The study showed that these procedures increased body weight, improved serum immunoglobulins, 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 dash*, purgation (*virechana*) is for *pitta dosha* and emesis (*vamana*) is advised 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 effective (Susruta, 2005).

(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

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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 tumor (Sharma, 2004).

(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. More than 25 herbs reported to have the potent anti tumor activities in various studies. Few of them are mentioned below.

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* (*bhallataka*) 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 triterpines 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*

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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 (*lekhana*). 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 wounds (Susruta, 1966). 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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