

## UNDERSTANDING CANCER PATHOLOGY UNDER THE LIGHT OF DOOSHIVISHA

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### ABSTRACT

We are living in the ocean of chemicals. Our body gets exposed to several kinds of toxins in little quantity regularly through *Viruddhahara* (unwholesome food), long term usage of drugs as medicines for chronic diseases, addiction to alcohol, Tobacco, Environmental toxins, Occupational toxins, Agricultural toxins etc. These toxins which are considered to be carcinogens gradually accumulate & remain in the body for long duration. This is called as cumulative toxicity. If they are not eliminated timely & properly, they will be in quiescent or latent form and will not be potent enough to cause acute ill effects. In due course, they target over any of the *Dhatus* or tissues in the body to present with a disease in future. This *samprapti* is similar to the cancer pathology wherein the signs & symptoms of the cancer patients depend upon the cell, tissue, organ or the system of involvement. The detail understanding is dealt here in this article.

**Keywords:** Dooshivisha, Cumulative Toxicity, cancer

**INTRODUCTION:** If any substance taken in any amount, by any route produces harmful effect i.e Disease, deformity or death over the body, then it is called as poison. The word poison is derived from the Latin 'potus' means to drink. The term 'potus' became 'potio' and then poison in old French, a drink that could harm or kill.<sup>1</sup> The substance, after getting exposed to it frequently in small quantities, starts accumulating in the body for a long period and gets converted into cumulative toxicity or *Dooshivisha*. It produces its toxic effects or disease after certain years.

Cancers are a large family of diseases that involve abnormal cell growth with the potential to invade and metastasizes any part of the body. It is the second leading cause of death globally.<sup>2</sup> Understanding its causes & pathology are highly essential for planning the treatment. So, here an attempt is made to understand the cancer pathology under the light of *Dooshivisha*.

**Dooshivisha -**"*Kalantara prakopi visham Dooshivisham*" *Dooshivisha* is defined as the visha or the poison, which produces its effect after long periods of repeated exposure to the substances having mild toxicity.<sup>3</sup>

This is called so, because it causes vitiation of *dhatus* producing its diseases.

**"Yasmath Dushayate Dhatun tasmath Dooshivisham Smritam"**<sup>4</sup> The word *dushi* (Ishi) is derived from the root word *Dush*(Isha). The word *Dushi* means impure or possessing the property to vitiate.<sup>5</sup>

According to yogaratnakara, *Kritrima vishas* (Artificial poison) are of 2 types. *Dooshivisha* (*Savisha* – mixture of toxic substance) and *Garavisha* (*Avisha*- mixture of non toxic substances).<sup>6</sup>

**Causes of Dooshivisha** -The poison which vitiates *Dhatu* because of factors such as *desh*, *kala*, food, sleeping during day time is called *Dooshivisha*.<sup>7</sup>

### ***Dooshita Desha/ Deranged Land-***

Environmental & Occupational toxicity leads to *Dooshivisha*. They may be toxic pollutants of land, water and air, garbages, toxic radiations, photo toxicity etc. These have increased due to the improper disposal of waste, urbanization, industrialization etc. Entry of these chemicals or pollutants in minute quantity regularly in to the body leads to its chronic toxicity which will precipitate the problems like haematological, hepatic and renal disorders, carcinogenicity, mutagenicity, teratogenicity, reproductive defects, behavioral, ophthalmic, skin problems and many more.

Polluted land (*Dooshita desha*) i.e. humid land where there is excess wind, cold, rainfall (*anupa desha*) influences on *kapha* and *vata dosha*, and perpetuates the poisonous effects of accumulated toxins (*Dooshivisha*) in the body.

***Dooshita Kala /Deranged weather*** - Repeated exposure to the abnormal climate, weather and its hazards for long produces harmful or toxic effects over the body. If seasonal purification of the body is not done, it may change into *Dooshivisha* or as carcinogens producing diseases/cancer.

Cold wind (*sheetanila*), cloudy days (*durdina*), rainy weather makes the body moist (*klinna*), reduces the power of digestion (*pachakagni*) & metabolism (*dhatwagni*), aggravates both *kapha* and *vata dosha*, thereby triggering the effects of *Dooshivisha*.

***Dooshita anna/Toxic or harmful food*** - Pesticides, fertilizers used in agriculture; preservatives, colouring agents, taste-makers, adulterants used in food industry; hormone injections given to the cows to yield more milk etc are all found to be highly toxic to the human body. i.e. Wheat flour brands in India are contaminated with

pesticides, and chemicals in the form of Linden, DDT, Aldrin, Dieldrin, Ethion were also found in many samples. These toxic chemicals get deposited in the body and act as carcinogens.

The abnormal foods like unwholesome junk foods, drinks like alcohol, and *pitta* aggravating foods like sesame oil and horse gram etc *ushna*, *teekshna*, *Vidahi Dravyas* and food habits like *adhyashana*, *Viruddhahara* & *Ajeernanashana*, *samashana* can lead to *Dooshivisha*. The retention of metabolic waste products in the body may cause reabsorption of toxins into blood stream leading to *Dooshivisha*.

***Dwivaswapna***-Regular day sleep is also one among the triggering factors of *Dooshivisha*. Anger, stress, excess indulgence in sex & exercise etc. also affects both body and mind triggering *Dooshivisha*.

***Stavara jangama kritrimavisha***-*Sthavara vishas* like *ballataka*, *sarpaganda*, *es-warimoolee*, *Kaarpaasa*, *tambahku* etc *jangama vishas* like *Sarpa visha*, *mooshika visha*, *Lootavisha*, *alarka visha*, *Vrischika visha* and *kritrima vishas* like *Dooshivisha*, *garavisha* and *viruddhahara* should be eliminated from the body completely by proper treatment. If not, after many years, the left over poison or toxic material enters into deeper *Dhatus* (tissues) and gets converted into *Dooshivisha* by the influence of triggering factors.<sup>8</sup>

Chemicals in the form of drugs like Quinine, NSAIDS, Steroids once absorbed may remain or accumulate within the body as such or after biochemical modification for variable periods of time at different sites in different concentrations. The effect of this chronic accumulation is *Dooshivisha*.

Drug induced Nephrotoxicity by Cisplatin, Hepatotoxicity by Paracetamol, Methotrac-

exate and many such toxicity develops from the cumulative effect of long term intake of drugs used in the treatment of Arthritis, HTN, DM, Tuberculosis, Epilepsy etc. Long term usage of various anti-viral, antibacterial or antibiotics may also result in cumulative toxicity or *Dooshivisha*. In one or the other way these are carcinogens.

#### **Formation of *Dooshivisha* (cumulative toxicity)**

***Abhikshanashah-(Repeated exposure)*** - Repeated exposure to *Dooshita desha, kala, anna, &Divaswapna* leads to *Dooshivisha*.<sup>7</sup> Exposure to small amounts of mild toxins once or twice will not accumulate in the body to produce toxic effects. But the word“*Abhikshanashah*” means repeated exposure to the small amounts of mild toxins. This repeated exposure cause'saccumulation of toxins in the body to produce the effects of *visha* later called as *Dooshivisha*.

***Jeernam (partially metabolized)*** - Any type of *Visha* (*sthavaram, jangamam, kritrimam*) which is not completely eliminated from the body or partially detoxified and being deposited in the body at various *Dhatus* (tissues) producing cumulative effect.

***Vishaghnoushadibhir hatam***- This refers to the partial reduction in the potency of the poison inside the body (partial detoxification) by antidotes or antitoxic therapeutic agents. This results in accumulation of poisons having low potency, which later gets converted into *Dooshivisha* producing many diseases.

***Dehadashesham yadnirgatam*** -Partial elimination of poisons from the body also leads to retention & conversion of left over poison into *Dooshivisha*.

***Davagni, atapa, vaata shoshitam*** - Exposure to heat flame or fire etc converts *visha*

into *Dooshivisha* (Latent poison). This is because certain properties of poison are altered by exposure to heat and fire and this, in turn results in reduced potency of *visha*.

Exposure to intense heat, fire and sun rays, harmful rays specially Infra red rays, X-Ray radiations, UV radiations (which disinfects air, water and even poisonous substances) *Visha dravyas* kept on exposure to sun, It causes the detoxification process to get accelerated and reduces the potency of the poison.

Exposure to *sheetala vata* (cold wind) dries up the water content of *Visha* and reduces some of its natural properties like *teekshna, ushna* etc and makes it less potent. This is because of *Ambuyonitva*. Hence these low potent poisons in due course change into *Dooshivisha*.

***Swabhavato va guna vipraheenam***- If any poison has low potency by its nature (having less than ten properties of a poison), it won't prove fatal rather gets accumulated to be converted into *Dooshivisha* after a long period.<sup>9</sup>

***Delayed manifestation*** -As the potency of the *visha* to which a person is exposed is very low i.e,*Viryaalpabhatavat* and as it gets *avarana* (masked) by *kapha* i.e, ***kapha avrutatvaat***, it is incapable of producing disease immediately. So, it gradually accumulates in the body for year's together i.e, *Varshagananubandhi* to present as a disease in the future. This explains the delayed manifestation of its toxicity.<sup>10</sup>

Causative factors of *Dooshivisha* (Cumulative toxicity) can be compared with the different types of carcinogens. Repeated exposure to these carcinogens results in genetic change in a susceptible cell. Initial genetic change may be inherited (Germline mutation) or acquired (Somatic mutation).The germline mutations are in-

herited from the family considered as ***ku-laja*** where as somatic mutations are acquired ie ***Apathya nimittaja***.

For the somatic mutation to take place, the person should be repeatedly exposed to carcinogens. Some carcinogens are 'initiators' which initiate the genetic change and they may be physical, viral, chemical carcinogens. Some are 'promoters' such as hormones, by the influence of which the carcinogenic process progresses. Some more are initiators and promoters i.e, 'complete carcinogens'.

Cancer is most common in tissues with rapid turnover, especially those exposed to environmental carcinogens and whose proliferation is regulated by hormones. Genetic mutation or damage is nearly universal in human cancer. (An actual sequence change in the DNA is called as mutation) The most common genetic changes that occur in cancer are the activation of proto-oncogenes & inactivation of tumour suppressor genes.

These genetic mutations arise as a consequence to random replications errors, repeated exposure to carcinogens and faulty DNA repair processes. 5 to 10 accumulated mutations are thought to be necessary for a cell to move from the normal to the faulty malignant phenotype. All cancer are genetic, most cancers are not inherited.

The cell with fully malignant phenotype develops the characteristics of uncontrolled proliferation, invade tissues, metastasize and colonize distant sites and results in full blown clinical features of cancers.

*Visha* generated by repeated exposure to *dushita desha, kala, anna, diwaswapna*; incompletely eliminated *stavara, janagam, kritrim vishas*, or low potent poisons gradually accumulates in the body for years together. These accumulated toxins

eventually cause somatic and genetic mutations, which is responsible for the conversion of a normal cell into malignant phenotype. This happens because of the *dosha & dhatu dushti* caused by cumulative toxicity.

The manifestation of different types of cancers depends upon, the type of *dosha* and the variety of *dhatu* which the accumulated toxins have targeted. This explains the *samprapti* (pathogenesis) and different *dhatuprabhava vikara* or disorders/cancers pertaining to different tissues of the body as manifestation of effects of *Dooshivisha*.

***Purvaroopa (prodromal features)*** -As per Acharya Sushruta, the prodromal symptoms of *Dooshivisha* are drowsiness (*nidra*), feeling of heaviness in the body (*Guruthwam*), yawning (*tandra*), Laxity of joints (*sandhi vishlesha*), horripilation (*Harsha*) and body ache (*Angamarda*). These are the *samanya purvaroopas* but the *vishista poorvaroopa* depends on the *dhatu* or *srotas* which the *Dooshivisha* has targeted.<sup>11</sup>

As *Visha* is *kaphavruta* here, *kaphaja* features dominates in the *poorvaroopa* stage. In this condition, the *doshadushya Samuchana* has already taken place ie *doshas* have already taken *ashsyas* in the *dhatu* where there is *khavaigunyata* i.e, the *dhatu* which is weakened either genetically or acquired.

***Lakshanas (clinical features)*** -*Lakshanas* of *Dooshivisha* can be understood according to the *dhatu* (tissue) or the *srotas* involved in the *samprapti* (pathology). *Vamana, bhinnapurisha, vairasya, pipasa, annamada, avipaka, arochaka, anaha*, explains the involvement of GIT. *Dushyodara, dakodara, padakarasya shopham* denotes that of abdomen, haemopo-

etic, hepatobiliary, urinary system involvement.<sup>12,13</sup>

*Kota, kushta, vaivarna, mandala, vigañha* describes the features when it targets over the skin. *Gadgada vak, murcha, moha* are the neurological manifestations. *vishanna, unmada* that of psychological (mind) & *Vishama jwara isthat* of immune system. *Shukrakshaya* denotes male reproductive system involvement.<sup>13</sup> *Dhatu prabhava vikara* and *dhatukshaya* describes the possibility of involvement of any *dhatu* & even *upadhatu* (like *stanya, artava, twak* etc) in the body, to present with any disease as the effect of *Dooshivisha*. This explains the wide range of clinical features of primary and secondary cancers.

**Avayavgata Dooshivisha lakshana-** When *Visha* takes *ashraya* in *Amashayait* produces the diseases due to derangement of *kapha* and *vata*. When it gets located in the *Pakwashaya*, it produces diseases of deranged *vata* & *pitta* dosha. The patient develops shedding of the hair of the scalp and body & appears just like a bird which has lost its wings, describes the status of the cancer patients at its terminal stage or cancer cachexia.<sup>14</sup>

**Rasadidhatu sthita Dooshivisha lakshnas-** When *Dooshivisha* targets over *rasa, rakta* etc seven *dhatus*, it will produce clinical features/diseases pertaining to the *dushita rasa raktadi* seven *Dhatus*, similar to the signs & symptoms of the cancer patients which depend upon the cell, tissue, organ or the system of involvement.<sup>15</sup>

The following are the symptoms/ diseases produced by *dushita rasaadi dhatus* or the *dhatuprabhava vikara* produced by *Dooshivisha*.<sup>13</sup>

1. *Rasadhatu-Aruchi, Apaka jwara, Ajirna, pandu, karshya, klaibya* etc

2. *Raktadhatu- kamala, Raktapitta, Asrigdhara, pleeha, gulma, vidrradhi Kusta, Vaivarna visarpa* etc
3. *Mamsadhatu-Mamsarbuda, adhimamsa, pootimamsa, gandamaala* etc
4. *Medhodhatu- prameha purva roopa*
5. *Asthidhatu-Adhyasthi, adhidanta, asthibheda, kesha nakha dosha* etc.
6. *Majjadhatu-parva ruk, bhrama, murcha* etc.
7. *Shukradhatu-Klaibya, alpayu* etc

No tissue is spared in the pathology of *Dooshivisha* but the clinical presentation of patients depends upon the specific tissue, organ or the system involved in the pathology in the particular patient.

#### **DISCUSSION & CONCLUSION:**

Many lifestyle disorders like Cancer, DM, Obesity PCOD, Hypothyroidism etc are the effects. Our body gets exposed to several kinds of toxin in little quantity regularly which accumulates and remains in the body for long duration known as cumulative toxicity. Though the exposure to chemicals is mild, it accumulates as it is for long triggering the genetic mutation essential any variety of cancer. They target over *Dhatus* or tissues having *sahaja* or *apathyta nimittaja khavaigunya* triggering cancer pathology. Depending upon which *dhatus* it has targeted, it produces cancer of that particular cell or tissue. Patients presents with clinical features of specific cancer which explains the different *dhatu prabhava vikaras* or *lakshanas* pertaining to the different tissues of the body as manifestation of effects of *Dooshivisha*.

It can be understood by the above explanation that cancer is one among the disorders caused by *Dooshivisha*. Therefore, the concept of *Dooshivisha* holds good in understanding the cancer pathology.

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