Original Article

Understanding the etiopathogenesis and diagnosis of malignancy in the framework of *Ayurveda*: A review based on experience of working in an institute of oncology

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Abstract

Background: The etiopathogenesis and diagnosis of cancer has intrigued modern oncology researchers for decades, and it is still a rapidly growing area in medicine. Cancer is not a single disease, but rather a collection of related diseases which is diagnosed on the basis of aberrant cellular changes. Since this is established by the modern medical science, it becomes important to understand it from the perspective of *Ayurveda*. Despite the fact that there are a few endeavors in this area, there is no common agreement among the experts. The current article is an effort to fulfill this knowledge gap. **Aims and objectives:** To understand the cancer systematically in the frame work of Ayurveda and propose its probable *Samprapti* (pathogenic process) based on clinical observations. **Materials and methods:** It is based on the clinical observation and detailed examination of 400 cancer patients, following modern and Ayurvedic methods in an institution dedicated to oncology. **Results:** After careful study of each type of cases of cancer at its all stages to understand the natural history and clinical behavior, Ayurvedic pathogenesis, diagnosis with possible etiologic association has been arrived at. Three main conditions, namely *Udara* (enlargement of abdomen), *Gulma* (lump in abdomen) and *Vidradhi* (abscess) can be equated with cancer. **Conclusion:** Modern diagnosis of cancer cannot be equated with any single disease entity mentioned in the Ayurvedic literature. *Udara-Gulma-Vidradhi* is the abdominal tumors present as benign and possess cancerous potential.

Keywords: *Arbuda*, cancer, *Dushi Visha*, *Granthi*, *Gulma*, malignancy

Introduction

Cancer is a major burden of disease worldwide.[1] It is estimated that in India the total cancer cases are likely to go up from 979,786 cases in the year 2010 to 1,148,757 cases in the year 2020.[2] The growing incidence of cancer indicates an urgent need for strengthening and augmenting the existing diagnostic and treatment facilities, which are inadequate even to confront the present load.[3] It is also evident that therapeutic interventions had less success in reducing deaths from most cancers.[4] However, the early detection and removal of precancerous polyps, early detection of tumors, and accurate treatment have reduced the death rate from colorectal cancer.[5] This shows that an integrated approach of early diagnosis and accurate therapeutic interventions may be effective in reducing the mortality rate of certain malignancies. The situation has reached to the level that the common man have create the fear of the intensity of its trauma and the consequences there off; thanks to the negative effect it has created. The psychological impact become more dangerous than the disease contributing to already endangered person. It is strange that the exact details such as etiology and pathogenesis are still not completely known to scientists, but the so called civilized urban class has seeded fantastic concepts away from the reality, perhaps our media and medical professionals are responsible. Experience has shown that such patients are not only educated in the wrong way but also lacks social and psychological strength.

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India has the distinction of inheriting oldest traditional systems of medicine in addition to the classical system *Ayurveda*. The unconceivable developments in science and technology leading to revolutionary innovations in modern medical diagnostics have thrown challenge to these Indian systems of medicine, particularly to *Ayurveda*. There are absolutely no systematic institutional studies conducted essentially may be due to the lack of government initiatives and opportunities; an institute of oncology made a humble beginning by creating a research initiative under medical oncology in 1984.

As an *Ayurveda* physician, studies to understand various types of cancer in *Ayurveda* framework was initiated in 1987 continued up to 2004 as an ongoing clinical work. The institute, Kidwai Memorial Institute of Oncology, Bengaluru is a premier center of oncology registers almost 10,000 (now it is 18,000 plus) cases a year and has all the facilities for diagnosis and treatment; a National Institute of Mental Health and Neuro Sciences (NIMHANS) next door has been an additional advantage where CCRAS has a clinical unit. The clinical departments were very well connected and gave excellent support to study patients and follow-up during the course of treatment. After careful study of each type of cases of cancer at its all stages, three main conditions were found in the classical *Ayurveda* texts, namely *Udara, Gulma* and *Vidradhi* which can be equated with the cancer. This kind of work is perhaps the first and was very necessary to develop initiatives in *Ayurveda* oncology.

Aims and objectives of study

a. Evidence based identification of the conditions known as "malignancy" or "cancer" according to *Ayurveda*
b. To understand the etiopathogenesis of malignancy in the framework of *Ayurveda* and propose the probable *Samprapti* (pathogenic process) of it.

Materials and methods

To fulfill the aims and objectives of the study, a thorough review of literatures, both ancient Ayurvedic texts, modern medical texts along with the articles published in the reputed journals was done. To substantiate the theoretical understanding, evidences were collected from a clinical study which was done in an institute of oncology which is having organized method to register all cases approaching to the center. The hospital registry department takes the responsibility of maintaining all basic data of the patients. The documented clinical data were obtained from the help of respective surgeons and physicians of the institute. This has been an ongoing clinical study carried out for 15 years aimed to understand and diagnose cancer in the framework of *Ayurveda* with the help of all possible modern technological and clinical establishments with qualified and experienced oncologists in the Department of Research in Indian Medicine, Kidwai Memorial Institute of Oncology, Bangalore, Karnataka, India. The *Ayurveda* etiopathogenesis and possible diagnosis of the cases were done after having series of discussion with the concerned doctors on individual cases and senior *Ayurveda* physicians across the country having clinical experience more than 15 years.

Review of past

Cancer is a term used in modern medicine to describe a pathological status of a tissue of a particular part or system and not a disease by itself.[6,7] It can affect any part of the body,[8] hence, it will be wrong to correlate it with any single disease mentioned in *Ayurveda*. Keeping this fact in mind, literature was reviewed to see what *Ayurveda* ancient seers say to what *Ayurveda* physicians call cancer to-day. It was soon realized during the study that clinically examined cases cannot be equated directly to any single entity in the literature, and unless, all types are studied and followed during their natural course and compared with the scientifically diagnosed cases of cancer, no diagnosis or conclusion is possible. Since the middle of current century Ayurvedic physicians are constantly being exposed to various developments of modern medicine in cancer but seldom efforts appear to have been made to understand. Strangely, author find self-esteemed cancer specialists all over the country promising miraculous cure. The investigation and interactions carried out by this team, however, reveals that let alone the cure, they do not have a concept of cancer from any system of medicine. Vaidya Prabhakar Chatterjee has written a book titled Ayurvedic treatment of cancer in Bengali and English as early as 1955. His emphasis appears more on treatment and does not deal in detail about Ayurvedic concepts (At that time, however, the modern oncology was in infant state). There is couple of books in the regional languages. Authors do not find a source or reference book nor any research paper published based on clinical work (there were no research institute/center under any state or central Government devoted for *Ayurveda* cancer research except Kidwai Institute established in Bangalore in 1980). CCRAS has financed a research unit attached to a Mission Hospital (cancer centre) at Amala in Kerala, oriented mainly on treatment aspect. A research unit attached to a cancer center at Chittarajan existed, but the present status is not known.

Current concepts of cancer

The fundamental abnormality resulting in the development of cancer is the continual unregulated proliferation of cancer cells which do not respond appropriately to the signals that control normal cell behavior, cancer cells continue to grow and divide in an uncontrolled manner, invading normal tissues and organs and eventually spreading throughout the body.[9] Cancer development requires the acquisition of six fundamental properties such as self-sufficient proliferation, insensitivity to anti-proliferative signals, evasion of apoptosis, unlimited replicative potential, the maintenance of vascularization and for malignancy, tissue invasion and metastasis.[10] Since the development of malignancy is an extremely complex process, multiple etiological factors and multistep may involve in its pathogenic process and many agents, such as tobacco use, air pollution, exposure to harmful radiation and chemicals of industries, unwholesome diet, low

fruit and vegetable intake, obesity, physical inactivity, alcohol use, food contamination, drug abuse, radiation, chemicals and viruses, have also been found to induce cancer in both experimental animals and humans.[11] The modern concept of cancer depends exclusively on the specific changes that occur in the cell resulting in formation of a tumor which has very unique behavior. The word "neoplasm" "malignancy" "oncogenesis" "cancer" "neoplastic," etc., all refers to these cellular changes (arising out of genetic pathology) irrespective of the organ and clinical presentation.[12] Hence "cancer" diagnosis is not a "clinically" assessable entity, but always done by isolating the tissue, proved microscopically and sometime even by cytogenetical studies. The chromosomal changes are a definite pre-requisite factor for development of malignancy.[13] An increased risk of developing certain cancers can be inherited in the genetic material passed from generation to generation, accounting for up to 4% of all cancers worldwide.[14] This pathological process of the disease is more or less common at the cellular level which is scientifically well established. There are many commonalties in all cancers which is indisputable, e.g., epidemiology, etiology, pathogenesis, behavior, prognosis, treatment strategy, fatality, etc. The technological innovations have undoubtedly revolutionized the diagnosis of cancer and precision in identification of the site and the cellular origin with all minor details.

Ayurvedic understanding of cancer based on clinical evidence and ancient classics

To understand the cancer from Ayurvedic perspective, in this review a common clinical entity i.e., mass per abdomen found in many malignancies at some phases in natural course of the disease was chosen. Irrespective of primary site of diagnosis and stage, all clinically palpable abdominal mass abdomen cases were taken for study. Three main classifications were made for the malignant tumours documented clinically as mass per abdomen**.** In group A, primary cancers of the abdominal region (adults) were taken which includes carcinomas of stomach, pancreas, colon, kidney, ovary, endometrial, bladder, Non-Hodgkin's lymphoma (NHL), Hodgkin's disease, hepatocellular carcinoma, chronic myeloid leukemia, acute lymphocytic leukemia and retroperitoneal sarcomas. In group B, metastatic to abdomen (primary known or unknown) in adults were taken which includes, female breast cancers with abdominal lymph nodes metastasis, esophagus cancer with extension to stomach, lung cancer with lymph node metastasis, testicular cancers with lymph node metastasis, malignant melanoma with abdominal metastasis, metastasis to ovary by breast and stomach cancers, metastasis to omentum or to peritoneum by stomach, colon and ovary cancers. In group C, pediatric cases of malignancies were taken which includes acute lymphocytic leukemia; lymphoma (Non-Hodgkin's and Hodgkin's) neuroblastoma; Wilm's tumor or nephroblastoma, hepatoblastoma; rhabdomyoma sarcoma, germ cell tumor, chronic myeloid leukemia, metastasis to liver from other primary sites, lymph node metastasis from other primary sites, Wilms (kidney) and Ewing's tumors.

The documented clinical findings revealed that all solid malignant tumors end up as *Udara* (disorder presenting with enlargement of abdomen). Cancer patients presenting as mass in the abdomen is one of the common situation and many cancers have this clinical condition typically in different stages. Another condition *Abhyantara Vidradhi* (internal abscess) was also taken up for recognizing the malignant condition, as it appeared close to *Gulma* (lump in abdomen)**.** *Granthi* (cystic swelling) is the proper term to describe tumor. *Arbuda* (tumor) is also a *Granthi*[15], but both these have not been described as abdominal tumors. However, Sushruta has mentioned *Gulma* as a *Granthi* originating in the gastrointestinal tract.[16] It is a hard mass confined to the five anatomical positions.[17] However, all the *Gulmas* do not appear to be malignant type. The *Tridoshaja* (occurring due to the involvement of all the *Dosha*) or *Nichaya Gulma* having stone hard elevated mass which is described as incurable[18] can be a malignant tumor. The locations of *Gulma* cover almost the entire abdomen region from diaphragm to inguinal region and hence any of the tumors in Table 1 can be a *Gulma*. But as per Sushruta, *Gulma* doesn't

Table 1: The important sign and symptoms of *Yakritodara*

Category	Sign and symptoms
Symptoms in primary liver cancer (*Yaritodara*) (Generally vague and insignificant in early stages, no early cases were seen in the study)	Loss of appetite
	Mild to moderate pain in upper abdomen
	Mild to moderate jaundice
	Heaviness and bloated abdomen
	Loss of weight
	Mild nausea
	Dark faeces
	Clinically palpable liver
Metastatic liver disease	Cancers presented as metastasizing to liver
	Cancer of breast
	Cancer of stomach
	Melanoma (skin)
	Cancer of pancreas
	Cancer of lung
	Cancer of colon
	Cancer of rectum
	Cancer of esophagus
	Cancer of ovaries
Signs and symptoms of liver metastasis (*Yakritodara*) (Cases with advanced and treatment failures)	Loss of weight (significant)
	Dark coloured urine, altered skin colour (muddish)
	Bloated abdomen with ascites (moderate to high)
	Jaundice
	Upper abdomen pain
	Nausea and vomiting
	Aversion to food
	Sweating and mild fever
	Moderate to severe weakness
Chronic myeloid leukemia (*Pleehodara*) (cases had extensive splenomegaly with mild degree of symptoms, symptomatically treated)	Progressive pallor (chronic)
	Slow onset history of weight loss
	Recent onset of mild fever
	Reduced food intake.
	Self-appreciable mass in left abdomen
	Clinically nontender splenomegaly,
	Anaemia.

involve *Dhatus* but only *Doshas*[19] and hence obviously the mass doesn't originate from a tissue. From this description and also due to exclusion of *Gulma* from surgical management it is not possible to draw conclusion about *Gulma's* malignant identity. Among the *Udara Roga, Yakritodara* (hepatomegaly) and *Pleehodara* (splenomegaly) are described separately here as they have been identified without ambiguity. *Gulma* like mass are said to occur in *Udara* and have progressively frightening course.[20] Since all *Udara* are generally regarded as *Maharoga*[21] (dreadful) indicating extreme difficult clinical situation and *Udara* are regarded as terminal events of chronic pathological process, it is imperative to consider some of them as malignant. Most of the explanations in the texts appear clearly on the basis of external examination and definitely not by exploratory laparotomy.

According to modern oncology and observations of this study, liver is an important organ of metastatic spread in number of cancers and signifies advance disease (classified as 4th stage) but splenomegaly is seen only in hematological malignancies which are not considered as metastasis because spleen is a part of primary hematopoietic system. In this study, a total of 400 cases were studied where liver involvement was documented clinically, histologically and by imaging techniques. All patients presented with enlargement of liver and proved to be malignant were studied. Hepatomegaly is certainly in a malignant condition can be correlated to both primary and metastatic liver pathology. The important sign and symptoms of hepatomegaly, which were found in documented cases, are shown in Table 1. *Yakrita Vriddhi* (hepatomegaly) a term used in classics is benign enlargement and not growth.

The NHL in both children and adults, advanced abdominal Hodgkin's disease, ovarian cancer, peritoneal and omentum metastasis of various other tumours typically progresses to locate in abdomen[12] and can be diagnosed as *Dushyodara* (enlargement of abdomen due to *Tridosha* tending to ascites). 125 pediatric and 180 cases of adult NHL were studied, out of which 137 cases presented with abdominal mass and other cases were either mediastinal or peripheral nodal and extra nodal. Non abdominal NHL also progresses and finally reach abdomen. Hence all cases were studied. The details are presented in Table 2 with important signs and symptoms observed.

The tumors studied were esophagus, stomach, colon, pancreas, liver, soft tissue sarcoma, neuroblastoma (in children), renal cell and bladder-carcinoma, ovarian and uterus tumors. There are a few abdominal presentations but excluded from *Vidradhi* after study are, splenic enlargement in chronic myeloid leukemia, Hodgkin's and NHL, acute leukemia, metastatic liver in many solid tumors, lymph node, and omentum metastasis of the abdomen. Apart from the tumors discussed above, in the literature there are two specific conditions which are given separate status and relate to malignancies. These are also abdominal tumors but specific to organs referred clearly viz. *Yakritodara – Pleehodara*. These two conditions clinically referred as hepatomegaly and splenomegaly occurs in quite a number of benign and malignant conditions and they are very important clinical signs, but in Ayurvedic literature, the references are not only scarce but vague and confusing). The *Pleeha* or spleen appears to be given more importance than liver. The etiology, pathogenesis, and symptoms have been considered as common for both these organs.[22] The schematic presentation of etiopathogenesis is explained in Figure 1.

Role of *Dushi Visha* (low-grade poisons) in etiopathogenesis of cancer

If the entire principles of *Ayurveda* are studied, only one substance has gained the unique status of initiating a disease process independently of *Dosha;* generally the natural history of all diseases begins with *Dosha*. All Acharyas are unanimous of this view and it is of vital importance in both *Nidana* (diagnosis) and *Chikitsa* (treatment). It is not co-incidence but significant that it is named as *Dushi Visha* (low grade poisons cumulative in nature). Both these Sanskrit words originate from same root *'Dush'*-vitiating. As discussed above, Sushruta as a surgeon has given unprecedented importance to it and it is valuable in studying cancer. The *Visha* etiology can be of two types: (1) acting independently when it is strong and in a compatible situation or (2) combining with pathogenic *Doshika* process. *Dushi Visha* has been described as an indigestible low-grade poison, that not only not get metabolized but also not execrable;[23] it has the potential of locating in some tissue and gaining strength and start pathogenic process leading to the innumerable varieties of problems.[24] In the midst of chemically biologically poisoned environment, human beings are constantly endangered and most of the man-made substances have to be classified under *Visha* category with carcinogenic potential. The *Sannipatodara* which is specially mentioned by Sushruta as *Dushyodara*[25] needs to be given special attention. The etiology relating to *Dushi Visha* and producing typical serious signs and symptoms makes it appear malignant.

The global toxic environment, drugs and chemically and biologically manipulated food, in which industries have major contribution and can be taken as *Dushi* or *Gara Vishas*. From the Ayurveda point of view, all the primary cancers of the abdomen and metastatic cancers with primary focus elsewhere ultimately produce *Udara* and most of them also progresses to *Jalodara* (ascites) also.[26] Hence, in this study, *Dushyodara* emerged as an important disease to be identified and correlate with the malignant abdominal tumors. Further, the *Viruddhahara* (wrong combinations of food ingredients) and *Vishamahara* (incompatible) diet are well known to produce *Gara* like condition[27] which appeared very relevant from the observations made in the study. The use of term *Mahodara Yakritpleehei* (gross organomegaly) in *Garavisha*[28] is especially important in the context of malignancy.

Discussion

Over the period of last 40 years, modern oncology has systematically established on the basis of the highly evolved cell pathology in the majority of cancers including

Table 2: The important sign and symptoms of paediatric and adult- Hodgkin's and non-Hodgkin's lymphoma and paediatric leukaemia

Category	Sign and symptoms
Paediatric and adult Hodgkin's and NHL (NHL is acute and Hodgkin's is chronic; lymphadenopathy is very significantly seen in NHL and progression is very fast)	History of lymph node swelling Slow history in Hodgkin's and acute in non-Hodgkin's Fever acute or slow onset Hepato-splenomegaly Mild pallor Loss of appetite and weight
Pediatric leukemia (children up to 12 were only taken as pediatric group)	History of fever 8-10 days - uncharacteristic high degree Onset of progressive pallor along with fever Bleeding history varied type; common epistaxis, melena Progressive weakness On examination Hepato- splenomegaly Lymphadenopathy Appreciable anaemia Bleeding manifestations Fever Irritability Except in 5%-10% cases, clinically Similarity was found

NHL: Non-Hodgkin's lymphoma

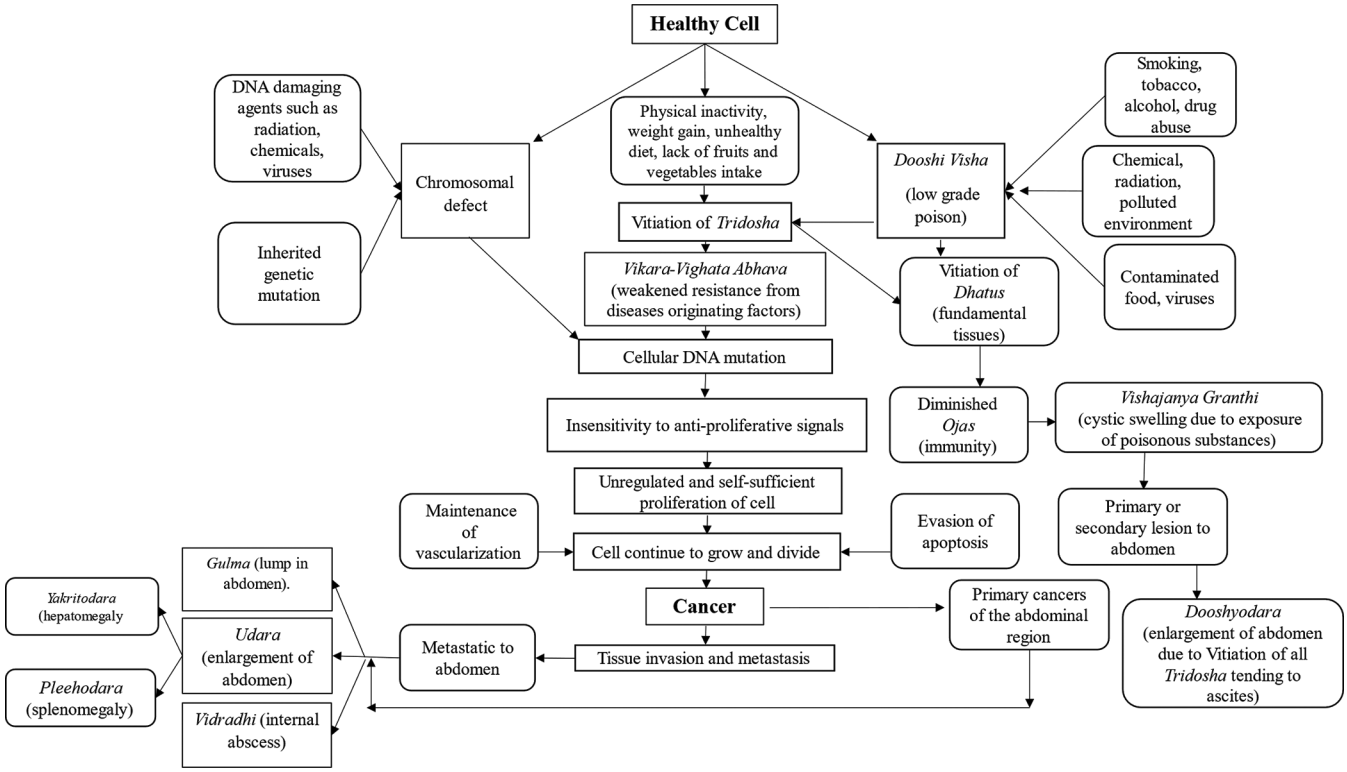

Figure 1: Showing the schematic presentation of etio-pathogenesis of cancer

cytogenetics. The study convincingly proved that the various classifications found in oncology are fully justified as their cell of origin, tumor developing speed. Clinical behavior, signs and symptoms, type of metastases are well understood and evident. Most of the tests are essential to establish the facts of cellular changes and to stage the disease; hence, these are absolutely objective and nonambiguous and formed the base for the present study. Ayurveda, particularly the surgical tradition has identified such conditions and attached importance in clinical observations.

The *Doshika* variation or classification based on clinical signs and symptoms may also be of value, but the precise details,

benign or malignancy, exact location, relation to other organs, etc., are seldom understandable clinically. The question of mass being "cancer" or not is very remote as there is no such strategy or methodology available or in practice for such differentiation and hence the question of exact identification as cancer is only hypothetical; particularly when the clinical *Doshika* staging itself is disputable. If all the possibilities in Ayurveda are taken, three types of differential diagnosis are possible which are *Gulma, Udara,* and *Vidradhi*.

Gulma is one most important disease found in Ayurvedic literature to describe tumours of the abdomen. In *Nidana Sthana,*[29] Charaka in fact has dealt only six diseases of physical origin and *Gulma* represents the abdominal disorders with mass but Sushruta in *Nidana Sthana* 7th chapter has taken it under *Udara.*[30] Experiences in this study clearly showed that both these are to be under stood as abdominal malignant tumors in Ayurvedic context.

Seventy percent of cases presented with abdominal mass at the time of registration with or without ascites and hepatomegaly and hence were Stage 4; most of these were referred after relapse or recurrence by doctors. It was evident clinically that Sushruta as a surgeon has clearly stated *Udara* as a terminal event in many incurable diseases, more so in all tumour-based diseases. This was observed both in adult and paediatric cases where resistant, recurrence, and failure to the treatment was seen. Both in primary and metastatic cancers mass or tumour in the abdominal cavity was found as a significant clinical manifestation. Mass per abdomen to an Ayurvedic physician will be *Gulma*[31] or *Udara*[32]or any other nonspecific entity.

Sushruta has described *Vidradhi* like mass in the abdomen as advanced with bad prognosis;[33] and proposed quite intensive therapies[34] in spite of its status as incurable[35] all indicating the present understanding of malignancy. Clinical differentiation is almost impossible and not necessary also. The clinical observation of cancer cases certainly has led to think that all malignancies are progressive stages of a pathological process initiated by *Vishas* (toxins) etiology in which the *Dosha* combination is peculiar and complex manifold by deeper involvement of *Dushyas*. The *Samprapti* (pathogenic process) must be viewed as precipitated by *Vikara Vighatabhavaabhava Siddhanta* (principle of presence or absence of disease-resisting factors) described by *Aatreya* in *Prameha Nidana.*[36]

To understand malignancy, the pathogenesis which ultimately lead to *Grathitha Avastha* (nodular stage) of disease; needs special attention in each of its condition and the various factors which are variable and gaining strong ground in its formation. These types of state have been explained by all the Acharyas at various instances. Obviously, "cancer" cannot be considered as a single type of disease from Ayurvedic point of view. Now in this study the details have been worked out more precisely with extensive clinical examination and scientific evaluation while working in the institute of oncology.

NHL is essentially the malignant tumor of the lymphoid system originating in bone marrow and it is considered under hematological type.[37] It presents with diverse range of diseases and sites but similarities exist within the group as a whole. The disease originates in the primary site of lymph nodes, i.e., cervical, maxillary, meditational, abdominal, and inguinal or in the extranodal organs but very soon spreads and involves other lymphatic areas and spread to other organs.[38] Lymphoma cells have tendency to infiltrate almost all tissues, especially liver, spleen, and abdominal cavity.[39] In the progressive disease, eventually involves the bone marrow and results in leukemia.[40,41]

The other primary solid tumors of the abdomen initially do not present like *Dushyodara,* but in advanced stages almost all of them progresses to *Dushyodara*. Hence, in author's study, another possibility was taken up as suggested by Sushruta – *Abhyantara Vidradhi.* Sushruta clearly differentiates the external and internal *Vidradhi*.[42] Further he explains the difference between *Gulma* and *Vidradhi*, where the *Dhatus* (tissue) involvement of *Vidradhi* is made clear.[19] Twelve different sites of origin are explained with their tendency to spread deeper into the *Dhatus* has been recognized.[43] The most striking point to be noted is (a) internal *Vidradhi* develop very fast (*Brishatva*), (b) severe (*Ghora*), (c) deep rooted (*Mahamoola*) and (d) have typical tumours (*Gulma Rupa)* with (e) anthill like growth (*Valmikavat*)[44]. All these features are clearly suggestive of malignant growth of carcinomas and sarcomas arising in abdominal tissues. Considering the details attributed to *Vidradhi* and clinically observing various abdominal tumors examined after surgery, *Abhyantara Vidradhi* as malignant tumor was an obvious choice of identification. *Pratyaksha* (objective evaluation) and *Anumana* (inference) were applied on the basis of *Shastra Pramana (*textual evidence).

Dushi Vishas are low grade poison and many of the modern etiologies of cancers referring to use of tobacco, alcohol, contaminated food, exposure to polluted environment and carcinogenic industrial chemicals, radiation, drugs, viruses; can be considered as *Dushi Vishas* in the Ayurvedic parlance. Viruses are the cause of cancer is very well established. In early 1960, Epstein-Barr virus (EBV) which produces Burkitt lymphoma in human was first identified as cancer triggering virus.[43] In addition to EBV, the International Agency for Research on Cancer as well as the USA' National Toxicology Program also recognized seven other human viruses or groups of viruses which are linked to human cancer, they are-hepatitis B virus, hepatitis C virus, human immunodeficiency virus type 1, some human papilloma viruses, human T-cell lymphotropic virus Type 1, Kaposi sarcoma-associated herpesvirus and Merkel cell polyoma virus.[44,45] Collectively, these eight viruses cause over 20 different types of cancer and contribute to 10%–12% of all cancer, with a greater burden in low-and middle-income countries.[46]

The manifestation of cancer involves very complex phenomenon and it makes very difficult to search it in Ayurveda

literature and comprehend it completely. The diagnosis based on the accepted doctrines were always controversial as it has been completely subjective based on clinical data; although the information of the clinical evaluation is objective, its interpretation in the framework of Ayurveda is not due to no definitive method or strategy to confirm or deny the conclusions drawn clinically. Experience and credibility are the hallmarks; an objective evaluation system available today has enormously taken leap with paradigm shift to minimum error. All the available technologies are of immense help to increase the scope of *Pratyaksha* (objective evaluation) for Ayurvedic physicians to pinpoint the diagnosis.

Ayurveda and *Vedic* doctrines lay emphasis on the concept of *Ojas* (an extremely subtle substance produced in healthy body which gives strength and vigor par excellence and protect from onslaughts) its role in human immune-resistance in maintaining integrity of the body. The *Vishas* are regarded as endangering substances having properties opposing *Ojas*[47] and harboring then can slowly expose the body elements to immune-related diseases including cancer. Cancer patients show extremely low *Ojas* evident in clinical examination of documented cases which supports the immune-compromised status explained in modern oncology.[48]

Conclusion

Malignancy is a condition manifested due to *Dosha*, *Dhatu* and *Mala* complex pathology precipitated by the influence and involvement of *Visha* of exogenic or endogenic origin; the origin of the pathogenic process, however, is in the *Dhatu*. The *Dushi Visha* concept of Ayurveda applies to all environmental and allied toxic etiology of cancer. Since the *Visha* have natural potential to initiate a unique pathological process which is known to get involved with *Dosha* and *Dhatu* during their natural pathogenic process later, all cancers in general and the diseases such as *Gulma* (lump in abdomen), *Vidradhi* (abscess) and *Udara* (enlargement of abdomen) in particular are to be taken as *Vishajanya Granthi Vikara***.** It has been convincingly concluded that *Udara-Gulma-Vidradhi* is the abdominal tumors present as benign and possess cancerous potential. It is necessary to appreciate the fact that the present environment and lifestyle involves a totally new innumerable substances never existed before.

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Conflicts of interest

There are no conflicts of interest.

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