

ROLE OF AYURVEDA IN PREVENTION OF PEDIATRIC CANCER

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ABSTRACT

Cancer is one of the deadliest diseases spreading drastically in 21st century, as now officially became the most dangerous killer in the world according to WHO. Cancer in children constitutes 5.5% of total cancer cases in India according to the Indian Council for Medical Research. Based on the *AdhyatmikaVyadhi* classification of disease pediatric cancer can be studied under three headings mainly, pre-conception, during pregnancy and after birth. In the contemporary system it is said that Inherent DNA mutations from parents would increase the risk of Cancer in children, which is the result of DNA changes that happen early in the child's life. Ayurveda explains about some of the measures for prevention such as *Dinacharya*, *Ritucharya*, *Rasayana*, *Vajeekarana*, *Shodhana*, *GarbhiniParicharya*. Hence here an attempt is made to study the role of these preventive measures in pediatric cancer.

Keywords: Pediatric Cancer, *AdhyatmikaVyadhi*, Preventive measures

INTRODUCTION

Cancer in children and adolescents is rare and biologically very different from cancer in adults. In India cancer is the 9th common cause for the deaths

among children between 5-14 years of age.¹ Up to 10% of all cancers in children are caused by a heritable mutation that initiates cancer during the fetus

in the womb.² Unlike many cancers of adults, lifestyle related risk factors don't play much of a role in a child's risk of getting cancer. A few environmental factors, such as radiation exposure, have been linked with an increased risk of some childhood cancers. In *Ayurveda* classics it is mentioned that *Beeja Dushti*, *Beeja Bhaga Dushti*, *Beeja Bhaaga Avayavan Dushti* leads to diseases in the offspring, one of such disease is the cancer. The diseases manifesting in the body and mind are called *Adhyatmika Vyadhis*.³ The diseases occurring due to vitiated *Doshas* are also considered as *Adhyatmika Vyadhi*. Cancer is one of the *Adhyatmika Vyadhi* which comes under *Adibala Pravritta*. Prevention of pediatric cancer can be done by following the preventive measures mentioned in our classics.

Aim:

- *Ayurveda* explains about some of the measures for prevention of diseases such as *Dinacharya*, *Ritucharya*, *Rasayana*, *Vajeekarana*, *Shodana*, *Garbiniparicharya* etc.
- Advising *Shodhana* before marriage or before conception helps in preventing cancer in children.

Materials and methods: Information regarding the paediatric cancer and preventive measures were referred from classical *Ayurveda* texts, contemporary texts, journals and various internet sources were critically analysed.

Causes of Paediatric Cancer

The cause of most childhood cancer is not known. About 10 percent of all cancer in children is caused by an inherited mutation i.e. a genetic mutation that can be passed from parents to their children (net source). This is explained long before only in *Ayurveda*. This can be correlated to the *Sahaja roga*.⁴

Most cancer in children, like those in adults, is thought to develop as a result of mutations in gene that leads to uncontrolled cell growth and eventually cancer. In adults these gene mutations reflect the cumulative effect of aging and long-term exposure to cancer causing substances. However, identifying potential environmental causes of cancer in children has been difficult, partly because cancer in children is rare and partly because it is difficult to determine what

children might have been exposed to early in their development. But in *Ayurveda* it is clearly mentioned about the diseases and its cause for all diseases. Childhood cancer can be correlated under *Trividha Vyadhis*, mainly under *Aadhyatmika Vyadhis*.

*Aadhyatmika Vyadhis*⁵ are of three types:

1. *Adibala Pravritta Vyadhis* – two sub types *Matruja* and *Pitruja*
2. *Janmabala Pravritta Vyadhis* – two sub types *Rasakrita*, *Dauhruda Apacharaja*
3. *Doshabala Pravritta Vyadhis* – three sub types *Kalabalapravrutta*, *Daivabalapravrutta*, *Svabhavabala Pravrutta*

Types of cancer⁶:

The most common types of cancer diagnosed in children ages 0 to 14 years are Leukemia, brain and central nervous system (CNS) tumours and lymphomas.

Prevention of Pediatric Cancer

The causes and prevention of Pediatric cancer can be classified under three heading based on *Adhyatmika Vyadhis*

1. Preconception
2. During pregnancy
3. After birth

Preconception

Adhibala Pravritta Vyadhis: The diseases which are caused due to the morbidity of sperm and or ovum are called *Adibalapravritta Vyadhis*. The hereditary diseases fall under this category and are inherited from parents. They are also called by other names i.e. *Sancharivyadhi* (*Yagnavalka*), *Kulaja* (*Charaka*), *Sahajavyadhi* (*Vagbhata*) and *Praktibhava Vyadhi* (*Bhela*) *Sahaja* ⁷(congenital/ genetic/ hereditary) diseases develop due to five reasons i.e. *Beejadosh*, *Atma karma Dosha*, *Aashya Dosha*, *Kaala Dosha* and *Maatru Aahara Vihara Dosha*. *Beeja Doshaja* (*Adibalapravritta- maatrija, pitruja*) diseases develop due to abnormality in *Beeja* (sperm) or *Beejabhaaga* (genes). Example of *Adibalapravritta* diseases are *Arsha* (piles), *Kushta* (Skin diseases), *Rajayakshma* (tuberculosis), *Madumeha* (diabetes), *Shwitra* (lecoderma) and *Apasmara* (Disorder of memory, epilepsy) Cancer can also be taken under this

category, according to modern science up to 10% of all cancers in children are caused by a heritable(germline) mutation(a mutation that can be passed from parents to their children). For example, about 45% of children with retinoblastoma, a cancer of the eye develops mainly in children, inherited a mutation in gene called RB1 from parent⁸. Inherited mutations associated with certain familial syndrome, Becwith-wiedmann syndrome, and von Hippel-Lindau syndrome, also increases the risk of childhood cancer. Children who have Down syndrome, a genetic condition caused by the presence of an extra copy of Chromosome 21, are 10 to 20 times more likely to develop leukemia than children without Down syndrome⁹. However, only a very small proportion of childhood leukemia is linked to Down syndrome.

Preventive measures

Healthy *Aahara, Vihara*; Avoid exposure to risk factors of cancer; *Shodhana; Rasayana; Vajeekarana*

During pregnancy:

Janmabalapravritta

The diseases which occur in the child due to improper dietetic and lifestyle practices followed by Mother during the conception and developmental stages of the foetus are called *Janmabala Pravritta Vyadhis*¹⁰. *Acharya Sushruta* has classified *JanmabalaPravritta Vyadhis* into 2 sub types. They are a) *Rasakrita* and b) *Daurida Apacharakrita*. When the mother to be takes of any particular taste or food in excess, they tend to produce some diseases in the child. These diseases are called *Rasakrita Vyadhis*. According to modern science also it's proved that Genetic mutations that initiate cancer also arise during development of a fetus in the womb. Evidence for this comes from studies of monozygotic (identical)twins in both twins developed leukemia with an identical leukemia initiating gene mutation.¹¹Children whose mothers had X-rays during pregnancy and children who were exposed after birth to diagnostic medical radiation from computed tomography (CT) scan have also been found to have an increased risk of leukemia, brain tumors and possibly other cancers¹²

Preventive Measures

Healthy food habits; Avoid radiation, use of mobiles; Follow *GarbhiniParicharya*¹³; *Agnihotrahoma*¹⁴

After birth

Most cancer in children, like those in adults, is thought to develop as a result of mutations in genes that lead to uncontrolled cell growth and eventually cancer. In adults, these gene mutations are often the result of exposure to cancer causing environmental factors, such as Cigarette smoke, Asbestos and Ultraviolet radiation from the Sun. One study found that Melanoma in children and adolescents (ages 11-20 years) has many genomic similarities to melanoma that occurs in adults, including an enrichment of UV-induced mutations¹⁵. However, environmental cause of childhood cancer has been difficult to identify, partly because cancer in children is rare and partly because it is difficult to determine what children might have been exposed to early in their development. In fact, most childhood cancers are not thought of as being caused by environmental exposures. Nevertheless, several environmental exposures have been linked to childhood cancer. One is ionizing radiation, which can lead to the development of leukemia and other cancer in children and adolescents who were exposed to radiation from the bombs dropped in Japan during the Second World War had an elevated risk of leukemia, and children who were exposed to radiation from Chernobyl nuclear plant accident had an elevated risk for thyroid cancer¹⁶. A number of other environmental exposures have been reported to have possible association with childhood cancer. However, because of challenges in studying these associations, difficulty of determining exposure at the relevant time period in a child's development, it is difficult to draw firm conclusions. Some types of childhood leukemia have been associated with father's tobacco smoking¹⁷ with exposure to certain pesticides used in and around the home or by parents at work place¹⁸ with solvents, which are organic chemicals that are found in some household products, and outdoor air pollution. Studies of childhood brain tumors have suggested possible association with exposure to pesticides in and around

the home¹⁹ and maternal consumption of cured meats²⁰. Children under Antibiotic treatment for repeated infections may be one of the reasons for Cancer. *Niraama Dosh*a developing after infectious diseases suppression or antibiotic therapy if not expelled gets lodged in tissue (*Dhatuleena* state of *Dosha/Visha*). Lodging of *Saama* or *Nirama Dosh*a or *visha* in tissue (according to susceptibility) in course of time causes *Ojo Dushti*, produces grade 3rd *Balavyapat* of the tissue or cells in the prime and foremost event in pathogenesis of cancer.²¹ According to recent studies use of excess electromagnetic fields (EMF) is also one of the causes for childhood cancer. Children and babies are chronically exposed to many sources of EMF, in particular at home, where they can spend much time playing with computers and other wireless-enabled devices, watching television or near electronic baby monitors that emit RF in their cribs. These exposures are relatively new in the last two decades and may represent a potential new carcinogen and neurotoxin that with chronic and indiscriminate exposure may have health consequences in the long term.²²

Preventive Measures

Advice healthy food habits; Avoid electronic gadgets; Advice *Medhyadrugs*; *Deepana*, *Pachana* (when required to maintain proper *Agni*)

DISCUSSION

Preventive Measures and its Rationality: *Ayurveda* main aim is *Swasthasya SwastaRaksana*, prevention is the better tool to be healthy. *Ayurveda* explained preventive methods like *Dinacharya*, *Rutucharya*, *Ratricharya*, *Sadvritta*, *Aharavidhi*, *Rutu Shodana* and some of the *chikitsa* like *Prakritisthapani Chikitsa* (health maintenance), *Rasayana Chikitsa*, *Naishtiki Chikitsa* (spiritual approach) and *Satvavajaya Chikitsa* etc. for prevention of all diseases and same if not followed may lead to diseases.

Pre-conceptual

Ahara, *Vihara* plays a vital role in the maintenance of health. By following healthy *Aahara*, *Vihara*, *Dinacharya*, *Ritucharya* the *Dhatu*s of both mother and father would be formed properly. Also, by

following *Sadvritta*, *Manasika Dosh*as of both would be in balanced state. Healthy state of body and mind would help in generation of healthy sperm/ovum which would help in having a healthy baby. Genetic changes that cause cancer can be inherited from parents. They can also arise during a person's lifetime as a result of errors that occur as cells divide or because of damage to DNA caused by certain environmental exposures. Exposure to cancer risk factors by the parents continuously leads to alter in gene which would result in risking the child as well. Our *Panchakarma* procedures in them would help in detoxifying the entire system by removing potential carcinogens. It acts at bio-cellular levels, removes all the toxins, thus helps in having healthy sperm/ovum. In our classics, *Acharyas* have advised to undergo *Shodana*, *Rasayana*, *Vajeekarana* before conception in order to get a healthy progeny. *Rasayana* has *Yogavahi* property, arrests cellular multiplication, stimulates immune system, increases the quality of sperm and ovum, cellular aging would be reduced. Thus, helps in getting a healthy baby.

During pregnancy

Acharyas have mentioned pre-conceptual and antenatal care to have a good and healthy progeny which can be a preventive measure for the unborn child of a mother. *Prakritisthapana Chikitsa*, *Rasayana Chikitsa*, and *Naishtiki Chikitsa* can be undertaken to enhance cell metabolism, reduces oxidative stress, increases immunity and maintains the health. To maintain *Swasthya* of pregnant lady *Garbhini Paricharya*²³ is most important. Fetus is dependent on mother for its nourishment and oxygen. The care of the pregnant lady reflects on the quality and health of the offspring. Health of the pregnant women is maintained through proper *Garbhini Paricharya* right from conception till delivery. *Garbhini Paricharya* includes all aspects of care of pregnant lady like *Ahara* (diet), *Vihara* (exercise), *Pathya*, *Apathya*, *Yoga* and *Meditation* etc. Food is called life of living being. Mother being exposed to CA risk factors such as carcinogenic foods and unhealthy regimens would increase the risk of Cancer in child as well. *Acharya Sushruta* explains in *Rasa*

kritavyadhi that when the mother to be takes food of any particular taste or food in excess, they tend to produce some diseases in child. For example, excessive consumption of sweet foods only will cause diseases like *Prameha* (diabetes), *Sthoulya* (obesity) etc. condition. Similarly, excessive consumption of food rich in sour taste will cause *Raktapitta* (bleeding disorders) *Netraroga* (eye disorders), *Twak* disorders (skin diseases) etc. condition.²⁴ Food and regimen if generates a *Dosha* during gestational period, it afflicts the foetus directly. *Doshadushti* in genes, female reproductive organs and foetus causes various defects at the time of birth. After birth changes in *Beeja Swabhava* in structure results in *Vishama Dhatu* or cancer pathology.²⁵ Some studies have suggested that a woman drinking a lot of alcohol during pregnancy might increase the risk of leukemia in her child. Several studies have found a possible link between childhood leukemia and household exposure to pesticides, either during pregnancy or childhood. Some studies have also found a possible increased risk among mothers with workplace exposure to pesticides before their child is born.²⁶ Mother being exposed to harmful radiation during pregnancy puts the child at the risk of cancer. In order to neutralize the harmful radiation *Agnihotrahoma* which has been mentioned in our classics as one of the *Daivavyapashraya shikitsa* can be followed. *Agnihotra homa*²⁷ not only minimizes the effect of harmful radiation but also increases the immunity, creates a positive atmosphere which calms down the mind.

After birth

Children being exposed to many sources of electromagnetic fields (EMF) risk of cancer in them have increased. A precautionary approach through *Ayurveda* in the form of *Achara Rasayana*, *Rasayanachikitsa* and *Agnihotra Homa chikitsa* can be practiced. *Rasayana*, *Swarnaprashana* helps in increasing the immunity of the child, arrests the cellular multiplication. The food habits of children have changed drastically thereby increasing the risk of lifestyle disorders and cancer. Healthy food habits have to be advised and regular activities such as exercise, yoga and meditation have to be followed.

CONCLUSION

In spite of tremendous advancement at diagnostic level and growing awareness, modern medicines fail to stop new cancer cases and reoccurrence of the disease. The preventive aspect is usually neglected in current contemporary practices and the main emphasis is laid on curative measures. The main aim of *Ayurveda* is *Swastasya Swasthya Rakshanam Athurasya Vikara Prashamanam* i.e. maintaining the health of the healthy person and curing the diseases of the diseased. It is believed that 60% of cancer can be prevented by right choice of food and practicing safe healthy habits. Advising *Shodhana* before marriage or before conception, following proper *Garbhini Paricharya* and other measures such as *Dinacharya*, *Ritucharya* etc. by the couples helps in preventing the *Beeja Bhaga Avayava Dushti*, thus preventing Cancer.

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