



Review Article

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A SCIENTIFIC EXPLORATION OF SHADGARBHAKAR BHAVA (SIX PROCREATIVE FACTORS) FOR THE CAUSATION OF CHILDHOOD LEUKEMIA IN PURVIEW OF EPIGENETICS: A REVIEW

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ABSTRACT

This is a systematic review article in which classical literature of Ayurveda & contemporary science on subject of Garbhavakranti were explored from the library of my parent institute and other relevant sources were used. The data obtained were critically analyzed and presented. Objectives of this work are to assess lag of Shadgarbhakar Bhava for causation of Childhood Leukemia, determine the embryological aspects of Shadgarbhakar Bhava as per Ayurvedic and Modern perspective of Childhood Leukemia and to suggest a protocol for prevention of said disease. Original Research and published articles available on google scholar Pub-med and Med-scape, Reference Materials, Textbooks, Review Articles are the source of data. Conglomeration of Shadgarbhakar Bhava play vital role in appropriate development of an embryo. Intra-uterine environment can be modified by proper practicing of Satmyaja Bhava, Satvaja Bhava and Rasaja Bhava which produces healthy impact on embryo while Matraja Bhava, Pitraja Bhava and Atmaja Bhava cannot be changed. Lag of Shadgarbhakar Bhava causes diseases in offspring. Childhood leukaemia is one of these, maternal and nutritional factor have major role in this. Occurrence of Childhood Leukemia can be prevented by proper preconception counselling, antenatal care, and good mode of conduct exhibited by mother and father.

Keyword: Shadgarbhakar Bhava, Childhood Leukemia, Garbha, Upasneha, Dauhridini.

INTRODUCTION

Eternity of fundamental principles of classical literature reinforce the supremacy of Ayurveda in the present era. In the current and contemporary scientific advancements, fundamental concept enumerated in Ayurvedic anatomy have a huge research potential. The Ayurvedic prepare of embryonic states treat the union of Shukra (sperm) and Artava (ovum) along with the Atma (Soul) inside the Kukshi (womb) forms the Garbha (Foetus).¹ Rachana Sharir describes certain factors in view of genesis of embryo. At the time conception the balanced state of Dosha in Shukra and Shonita (Artava) with normalcy of Shadgarbhakar bhava (six procreative factors) play vital role in achieving a healthy progeny while any lag in these factors causes physical and psychological effect in progeny.

Shadgarbhakar Bhava i.e., Matraja (maternal), Pitraja (paternal), Atmaja (soul), Rasaja (nutritional), Satmyaja (wholesomeness) and Satvaja (psych),² are the six procreative factors have been beautifully described by different acharyas. Matraja bhava is responsible for formation of soft organs in progeny like Mamsa, Shonita (blood), Meda, Majja, Hriday, Nabhi, Yakrit, Plecha, Guda etc. Pitraja bhava makes Sthir (hard) elements such as Kesh, Shamashru, Loma, Asthi, Nakha, Danta, Sira, Snayu, Dhamani, Retah etc. Satmyaja bhava determines Arogyam, Analasyam, Aloluptvam, Indriya Prasadnam, Swra varna beej sampata, Praharsh, Viryam, Balam, Medha, Ayu, Ojas, Prabha, Uthanam, Santosham in child. Atmaja bhava is responsible for Buddhi (wisdom), Ayu (longevity), Atmagnanam, Vigyanam, Prana Prerna, Apana, Swara, Sukh, Dukh, Ichha, Dwesha, Chetna, Dhriti, Smriti, Ahankara, Praytna, Mana, Indriya (Sense organs), Akriti, Varna of progeny. Rasaja bhava plays role for Sharirashya abhinivritti, Sharirashya, abhivridhi, Pranubandhta, Tripti, Pushti, Utsaham, Balam, Varnam, Sthiti, Hani, Alolyum, Buddhi,

Vritti. Satvaja bhava constitutes spiritual, temperamental etc. qualities of progeny like Bhakti, Sheelam, Shoch, Shauryam, Krodham, Tandra, Utsaham, Taikshanyam, Mardavam, Gambhiryam, Anavasthitam, Tyagam, Matsaryam, Smriti, Moham.

Ayurveda has well explained that if Garbhini (gravida) follows appropriate diet and daily regime along with normalcy of Shadgarbhakar bhava influenced by the time factor, the foetus grow normally in the Garbhashaya (uterus).³ There is a huge number of diseases which can occur because of any holdup of these procreative factors and Childhood Leukemia is one of these. Leukemia is the most common type of paediatric malignancy, and it accounts for approximately 30% of cancer cases in children younger than 15 years old,⁴⁻⁶ and it is the most frequent reason behind childhood cancer mortality in the U.S. and approximately 6000 new cases are diagnosed each year.⁷ Leukemia is a type of malignant tumour, having malignant clonal expansion of immature myeloid or lymphoid blast cells characterized by increase in circulating WBCs.

An attempt has been made here to assess lag of Shadgarbhakar bhava for causation of childhood Leukemia and determine the embryological aspects of Shadgarbhakar bhava as per ayurvedic and modern perspective of Childhood Leukemia. In future this could suggest a protocol for prevention of said diseases.

This was a pure literary study in which the explored literature was analysed and interpreted. Classical literature of Ayurveda & contemporary science on subject of Garbhavakranti were explored from the library of my parent institute and other relevant sources were used. The data obtained were systematically analysed and presented.

Shadgarbhakar Bhava

Acharyas described that there are six procreative factors which play role in appropriate development of an embryo. When all these six procreative factors are present in concordance, then only a new life can come into existence.⁸

Matraja – Maternal factors

All soft organ and attributes of foetus predominantly come from mother they are called Matraja (Matru = mother, Ja = emerging from) Bhava (features). The traits inherited from mother are - Skin, blood, muscle tissue, fat, umbilicus, heart, pancreas, gall bladder, spleen, kidney, urinary bladder, stomach, duodenum, small intestine, large intestine, omentum, rectum, anal canal, and anus.⁸

Pitraja – Paternal factors

The attributes that are inherited from a father called Pitraja (Pitru = father, Ja = emerging) Bhava (features) are – Hair (Keshha), mustache (Shamashru), nails (Nakha), Skin hair (Loma), axillaries, groin hair, teeth, blood vessels, ligament, tendon, semen.⁸

Atmaja – Atma (Soul)

The traits of the soul that the foetus acquires are – to take birth in specific species, knowledge of self, life span, mind, control on actions of sensory organs, in and out movements of the air elements, inspiration, preservation of knowledge, unique appearance, distinctive voice, complexion, happiness and sorrow, desire and aversion, awareness, intelligence, memory, ego, enthusiasm. These attributes are called as Atmaja (Atma = Soul, Ja - emerging from) Bhava.⁸

Satmyaja - (Wholesomeness)

For the appropriate development of the Garbha, it must be provided by agreeable and acceptable factor through maternal diet. The Satmyaja Bhava is responsible for awarding health, vigour, nongreedy, attitude, serenity, and wellbeing of all organs, quality in voice, skin, and reproductive cells (sperm & ovum) and satisfaction in sexual activity.⁸

Rasaja - (Nutritional factors)

Abhinivritti of Sharira (origin of body), Abhivridhi (growth), Tripti (satisfaction), Pushti (Nourishment), Utsaha (enthusiasm), Sharira upachaya (physical structure, Sthiti (Maintenance), Bala (strength), Hani (Decay).⁸

Satvaja - (Psych/Mind)

Attachment, character, purity, aversion, awareness, memory, confusion, Sacrifice, jealousy, bravery, fear, rage, enthusiasm, fiery, rude, or mild nature, profoundness, unsteadiness.⁸

All the Matrijadi bhava are made of Pancha Mahabhuta and these Pancha Mahabhuta are responsible for the differences in appearance and characteristics of different matter due to different way of expression of Pancha Mahabhuta in those matters.

Leukemia is malignant disorder of haematopoietic stem cell compartment, characteristically associated with increased numbers of white blood cells in the bone marrow (Lymphocytic Leukemia) and peripheral blood (Myeloid Leukemia). Aetiology of Leukemia is still unknown in most patients and geographical variation in incidence. Acute Lymphocytic Leukemia shows a peak incidence in children.⁹ There are various risk factors for Childhood Leukemia including environmental, genetic and infectious causes like exposure of electromagnetic radiation (diagnostic X-Ray radiation during pregnancy), cigarette smoking, identical twins of patients with Leukemia, down

syndrome, Fanconi Anaemia, bloom syndrome, ataxia telangiectasia, Schwachman syndrome neurofibromatosis and other inherited diseases, cytotoxic drugs specially alkylating agents, industrial exposure of benzene, retrovirus, immune deficiency state (e. g., hypogammaglobinaemia). Anaemia is major symptom of Leukemia due to patient may feel extreme fatigue, dizzy, shortness of breath etc., loss of appetite and other sign and symptoms are bone and joint pain, lymphadenopathy, splenomegaly, headache, stomach-ache, fever, seizures, easy bruising, and bleeding (due to decreased number of platelets). Splenomegaly is one of the major signs that has been found in a study done to see changing trends in clinic morphological profile of Chronic Myeloid Leukemia.¹⁰

DISCUSSION

Matraja Bhava

All Acharyas have mentioned the ideal age of female to conceive and in Sushruta Samhita it is well explained the fact that if female at the age below 16 years is impregnated by a male below 25 years, either the woman will not conceive or she will have intrauterine death or the delivered baby will be of shorter life span and different kind of illness and deformed external or internal body organs.¹¹ Kula, Gotra of mother, reproductive health of mother, Beeja of mother, maternal age at the time of conception, diet, medication and regime of mother during her pregnancy give major impact on the health and normalcy of progeny.

Acharya Charak has mentioned that marriage between similar Gotras should be avoided which is very much logical to avoid recessive diseases which might be transmitted to new progeny when an individual marries to his/her close relative.

Advanced maternal age i.e., more than 35 years, is associated with the aneuploidy such as trisomy 13, 18, 21 and other risk factors like Hypertension and Diabetes are more common. Abnormal Beeja, Atma karma, Ashaya, Kala (Ritukala), Ahara evam Vihara of mother, vitiated Doshas cause abnormalities in the progeny, which affects appearance, complexion and Indriyas.¹²

Pitraja Bhava

Kula, Gotra of father, reproductive health of father, quality of Beeja and age of father at the time of conception, diet, occupation of father before conception of foetus has important role in achieving of healthy progeny. If Pitraja Beeja (Sperm) is caring abnormality, then progeny is prone to have genetic abnormality. The risk of adverse foetal outcome may increase due to exposures of drugs to father.¹³

Such as environmental exposures to mercury, lead, solvents, pesticides, anaesthetic gases, or hydrocarbons have been associated with early pregnancy loss.¹⁴

Occupation of father such as janitors, woodworkers, firemen, printers, and painters may affect health of progeny.¹⁵

Atmaja Bhavas

The cause of Leukemia is not clear in most of the cases, here Ayurveda gives valid reason for occurrence of such dreadful disease. The concept of daiva and purushakara have been well explained in classical literature. The effect of deeds of previous life is known as daiva. The effect of deeds of present life is known as purushakara. If the daiva is unrighteous, individual suffers in present life, though daiva is righteous, individual enjoys a healthy

life.¹⁶ Idiopathic, unexplained, and indigenous factors inclusive in Atmaja Bhava.

Satmyaja Bhava

Satmya is the practice of such things which suit the body and don't harm the self, even though qualities of those things are distinct from one's own constitution. The adequate existence of these elements defines the suitability for foetus, and it is designated as Satmya for the Garbha.

There are three types of Satmya described in classical texts- Kalasatmya, Deshasatmya and Sahaja.¹⁷

Kalasatmya

Proper time of Gharbhadhana Sanskara has been described by Acharyas for achieving a healthy progeny. Any lag in this such as improper time, season, age of conception, can cause harm to the progeny by creating epigenetic changes.

Deshasatmya

In the United States, Hispanic children have the highest leukemia rates.¹⁸ Some specific diseases are more prone to population of a particular region; Sickle-cell disease has been reported to occur in 2.1% of the neonates in Bahrain,¹⁹ 1.7% of the women in southern Iraq,²⁰ and 1.37% of neonates in Saudi Arabia.²¹

Sahaja

Tribal groups of India have their distinctive genetic makeup. Hence, these people suffer from specific type of health problems and genetic disorders such as Sickle cell anaemia, Thalassemia, G-6 PD, red cell enzyme deficiencies.

Rasaja Bhavas

Foetus receives its nutrition from mother through the process of Upasneha and Upasweda during intra-uterine life. Nutritional status of mother during pregnancy plays major role in achieving healthy progeny. Acharya Charak and Sushruta have mentioned month wise dietetics for mother during pregnancy, to fulfil the requirements of foetus for appropriate physical and psychological development.

Immunocompromised individuals are more prone to Leukemia. Hence, Rasaja Bhava can influence health of foetus.

Satvaja Bhava

Psychosomatic temperaments of both the parents, Milieu in which the mother lives and the impressions she receives during her pregnancy and the influence of one's own previous birth deeds are the factors determine psychological makeup of progeny.²²

The concept of Daurida Avastha of Garbhini is well explained in classical text, in which pregnant woman desires for things, this is an evident manifestation of the Satvaja Bhava.

Suppression of desires of the Dauridini (pregnant woman) may cause the psychological impairment in foetus.

In classical texts various aspects of Garbha have been described such as Garbha Mamsanumasika Vridhhi,²³ Garbhavridhikara bhava,²⁴ Garbha Upghatka bhava,²⁵ Garbhaposhana and Garbha Samskar.^{26,27} Garbhavikruti indicates that there was a concept of the congenital malformation in aspect of Ayurveda and there is detailed description of aetiology of various malformations found in progeny. The concept of hereditary, congenital, and familial diseases has been beautifully explained in terms of

Sahaja, Adibalapravrutta, Garbhaja, Janbalapravrutta and Kulaja Vyadhi. The organogenesis of foetus depends on Matraja bhava and Pitraja bhava and these bhavas also responsible for transmitting traits to the foetus. These bhavas should be in their Shuddha form to avoid cause deformity in the foetus. Panchakarma, Rasayana and Vajikarana Yogas can be used as preventive measures for reduction in the teratogenic effect.²⁸ Preconception counselling has important role in achieving the goal of a healthy progeny as well as prevention of congenital and genetic disorders.²⁹

In context of Childhood Leukemia there is a lot of factors which may be responsible i.e., male gender, white race, high birth weight, birth order, day care attendance, low socioeconomic status etc.³⁰ It has been proven that Shadgarbhakar bhava are not the factors that brings the progeny of similar characters, but they are the carriers of the organogenesis and other traits too.³¹ Preconception counselling have important role in prevention of congenital and genetic disorder like Arbuda (Cancer). Cancer is complexed and multifactorial metabolic disease to explain the pathogenesis of Cancer there is a huge need to explore more factors as only genetic mutation and environmental factors are not sufficient. Epigenetics explain the way environment deals with the genome which cause heritable changes which leads to variation in phenotype with maintaining the same sequence of DNA of the genome. During the intrauterine life of foetus there is various vulnerable factors, but maternal factor gives most major impact.³² Epidemiologist David Barker who has also advocated the theory of Foetal Origin of Adult Disease (FOAD), advocating the theory known as "Barker's hypothesis". It says that there is definite period of development during which foetus is "sensitive" to its environment. In 1986, Barker proposed impact of prenatal nutrition on late onset of coronary heart disease; exhuming the link between low birth weight and adult disease.³³

Matraja bhava leads to formation of Rakta in child and in contemporary science blood can be correlated with Rakta and Leukemia is aliment of blood so somehow default in Matraja bhava may be responsible for Leukemia and other bhavas can also influence. AML can be correlated to Majja kshaya described in classical texts.³⁴

The conglomeration of Shadgarbhakar Bhava plays vital role in appropriate development of an embryo. Intra-uterine environment can be modified by proper practicing of Satmyaja Bhava, Satvaja Bhava and Rasaja Bhava which produces healthy impact on embryo while Matraja Bhava, Pitraja Bhava and Atmaja Bhava cannot be changed.

CONCLUSION

The conglomeration of all six procreative factors has vital role in achieving healthy progeny. In this study, it is found that all six procreative factors have role in the occurrence of Childhood Leukemia in progeny, especially Matraja and Rasaja Bhava. Occurrence of Childhood Leukemia can be prevented by proper preconception counselling, antenatal care, and good mode of conduct exhibited by mother and father.

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