



Review Article

GESTATIONAL ANEMIA (*GARBHINI PANDU*) - A CRITICAL ANALYSIS

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ABSTRACT

Pregnancy is a unique joyful experience in every woman's life. It is associated with many complications, where Anaemia is one among them. Woman indeed is the source of human progeny. When protected, she protects the progeny. Pregnancy is the milestone event of a woman's life which transforms her from woman to a mother. Though it is a joyful journey, it is associated with lots of physical and physiological alterations which give rise to some health issues. Gestational anaemia is one of common health issue occurring in pregnancy on large scale in developing countries that requires an immediate intervention to save the life of both the mother the child. Ayurveda, an ancient Indian science has given more importance to the women and her health with vast descriptions of pregnancy, labour and its complications with management. Ayurveda has recorded some of the complications of pregnancy under the name *Garbhpadravas*. *Garbhini Pandu* is the commonest *Upadrava* among them. *Garbhini Pandu* is described as a symptom and not as a *Vyadhi* in Ayurveda classics. The present study evaluates in detail about the *Garbhini Pandu* and its management that is elucidated in Ayurveda and the study also attempted to explicate the correlational features with the Modern science.

INTRODUCTION

In India, anaemia contributes to about 80% and is the second most common cause of maternal deaths.^[1] Its prevalence is 14% in developed countries and 51% in in developing countries. In India, it varies from 65% to 75% being one of the most common nutritional deficiency disorders affecting the pregnant women. ^[1,2] According to the survey of Indian Council of Medical Research, more than 70% of the pregnant women in India were found to be affected with anaemia. ^[3]

Maternal anemia or the Gestational anemia is considered as the risk factor for poor pregnancy outcomes and becomes dangerous to the life of fetus. Maternal morbidity rates are said to be higher in anemic women based on the available data from India. ^[4] Extensive evidences are available showing the cause of LBW baby and the preterm delivery as the maternal iron deficiency anemia early in pregnancy. ^[5] This anaemia that affects the pregnant woman exhibits both negative maternal and child health and further increases the mortality. ^[6,7] These include poor work capacity, impaired immune function, fatigue, increased risk of cardiac diseases, and mortality etc negative health effects.^[8]

A study of RCT that included a Cochrane review has stated that in developing countries, haemoglobin level of the pregnant women was increased during the delivery with the administration of daily iron compared to intermittent iron supplementation.^[9] Some studies have opined that both daily and weekly

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iron supplementation are not effective in prevention of gestational anemia. [10]

Regarding the prevention and the treatment of severe anaemia, the World Health Organisation has reported that a more rapid erythropoietic response is observed and complete correction of iron deficiency with parenteral iron therapy compared to oral iron administration. [11] Consumption of high levels of iron on empty stomach have been shown to cause gastrointestinal distress in women. [12]

Whereas, intravenous or intramuscular iron supplementation is said to be connected with anaphylactic shock and allergic reactions; it is also observed that venous thrombosis, cardiac arrest and death are predisposed by parenteral iron therapy. [13,14] Hence, there is a need for the effective management of Gestational anaemia that affects the pregnant others in the delivering a normal healthy baby.

India is brimming with a rich heritage of traditional system of medicine. Among various systems of medicines that are followed, Ayurveda is one such traditional Indian system of medicine that focusses on prevention and curing the diseases. Ayurveda encompasses a scientific tradition of management of diseases based on *Aptopadesha* and its traces of origin can be found in *Rigveda* and *Atharvaveda*. Ayurveda more than a medical science, is a life science that has surplus of knowledge on the maintenance of health, therapeutic drugs, treatment of various diseases and ethnic folklore practices. [15]

Ayurveda, an ancient science that is 5000yrs old and practiced even today because of its authenticity has given more importance of women and thereby has a vast elucidation of women health, pregnancy, labour and their disorders with the management. In this study, an attempt has been made to evaluate the concept of Gestational Anemia which is called *Garbhini Pandu* in Ayurveda in detail.

Gestational Anemia (*Garbhini Pandu*)

Gestational anemia seen in pregnancy is defined as the condition with haemoglobin less than 11 g/dl (Hematocrit < 33%) in the first and third trimester and less than 10.5 g/dl (Hct < 32%) in the second trimester according to Center of Disease Control (CDC). [16] Whereas, World Health Organization (WHO) has stated that haemoglobin (Hb) concentration of less than 11 g/dl is defined as anaemia in pregnancy. [17] It also has recorded the severity of anemia as severe (hemoglobin concentrations of less than 70g/L), moderate (hemoglobin concentrations of less than 70 to 99g/L), and mild (hemoglobin concentrations of less than 100

to 109g/L) (to convert g/L to g/dL, divide by 10.0) respectively. [18]

In Ayurveda, *Garbhini Pandu* (anemia in pregnancy) is elucidated as a symptom of *Garbhini* and not a disease. It is described as a complication of *Garbha* that occurs in pregnant woman, in which *Rasa Nadi* is said to be compressed by the growing fetus and as a result, the *Rasa* does not flow freely in to the body resulting in *Pandu*. *Garbhini Pandu* also occurs due to the consumption of excessive *Amla* (sour) *Lavana* (salty) and *Katu* (pungent) *Rasa* (taste) *Aahara*, indulging in *Diwaswapa* (day time sleep), *Vishamashana* (improper dietary habits), *Vegavidharana*, (suppression of urges) and afflicted with *Manasika Bhava* (psychological effects). [19]

Acharya Kashyapa has described *Pandu* as a symptom of *Garbhini* in the context of *Rakta Gulma* and none of the *Brhatrayees* like *Acharya Charaka*, *Sushruta* and *Vagbhata* has explained the same in their *Samhithas*. [20]

Aetiology and Pathogenesis (*Nidana And Samprapti*)

In developing countries, the causes of anemia are multifold including deficiencies of iron, folate, and vitamins A and B12 etc micronutrient deficiencies, anaemia due to malaria and hookworm etc parasitic infections, anemia due to chronic infections like TB and HIV. [21-25] Aetiology may also vary based on the dietary practices, seasonal variations and geographical location too.

During the pregnancy, the overall iron requirement is significantly higher in the woman's life despite the losses incurred during menstruation. In pregnancy, there is greater production of red blood cells, increase in the iron needs to expand the plasma volume to compensate the iron loss at delivery and for the support and growth of fetal-placental unit. [26-28]

In a pregnant woman with average weight of 55kg, the physiological iron demand roughly corresponds to 1000-1200mg, about 500mg associated with expansion in red cell mass, 350mg associated with fetal and placental growth and around 250mg associated with blood loss at delivery. In the process of gestation, requirement of iron varies in different trimesters with lower iron necessity in the first trimester (0.8mg/day) and a much higher need in the third trimester (3.0-7.5mg/day). [29]

Iron deficiency anaemia if undiagnosed and untreated can affect both the maternal and fetal health to greater extent. Chronic iron deficiency being very dangerous leads to fatigue, reduced working capacity and disturbs the quality of life. In addition, palpitations, headaches, dizziness, pallor, breathlessness and irritability are also seen. Evidences

show a significant correlation between the premature birth and low birth weight, intrauterine growth restriction, low neonatal iron status, preeclampsia, and post-partum haemorrhage and the severity of anemia. [30, 31, 29]

In the current situation, women are playing a multi-tasking role and therefore unable to follow proper diet and lifestyle practices during pregnancy. These *Apathyakara Aaharavihara*, leads to vitiation of *Rasa Dhatu* and causes *Uttarottaara Dhatunirmiti Hani* or *Vikrut Dhatu Utpatti* and manifestation of *Garbhini Pandu*.

For pregnant women, Ayurvedic way of life will be very good and plays a significant role in the birth of a healthy progeny. Woman is said as the centre of '*Suprajanirmiti*' due to the dependency of fetus on the mother for nutrition. According to Acharya Haritha, '*Garbhini Pandu*' is one among the *Ashta-Garbhopadravas* and the most common disease occurring in pregnancy which means the diseases caused by fetus in pregnant women. Ayurvedic science enlists the causes of such disease as consumption of excessive *Amla* (sour) *Lavana* (salty) and *Katu* (pungent) *Rasa* (taste) *Aahara*, indulging in *Diwaswapa* (day time sleep), *Vishamashana* (improper dietary habits), *Vegavidharana*, (suppression of urges) and afflicted with *Manasika Bhava* (psychological effects). This in turn leads to the vitiation of *Rasavaha* and *Raktavaha Srotas* and to *Pandutva* in *Garbhini*. [32]

Clinical Presentation (Roopa)

During pregnancy, it is very crucial to screen for anemia as it is one of the commonest problems faced in the developing countries. Guidelines recommend that the anemia screening should be initiated in the first trimester, second at 24–28 weeks and third at 36th week of gestation. [33]

While defining the physiologic anemia of pregnancy, in addition to the haemoglobin values given by World Health Organisation and Centre of Disease Prevention for anemia in pregnant women, pallor with peripheral smear showing normal morphology of RBC is taken as criteria and any deviation from this is considered as pathologic. [34] Biochemically iron deficiency anemia is characterized by hypochromia where the mean corpuscular hemoglobin is less than 27 pg and microcytosis where mean corpuscular volume is less than 80 fl. [35] Established bio-markers of iron deficient anemia or the erythropoiesis includes the reticulocyte hemoglobin content, percentage hypochromic reticulocytes and percentage circulating microcytes that are measured using modern automated analysers. [36]

Ayurveda does not speak about *Garbhini Pandu* separately. After reviewing the literature in detail, the

theories and the *Nidanapanchaka* in correlation with *Garbhini*, *Samprapti* of *Garbhini Pandu* involves the dominance of *Pitta Dosha* and that increases the *Dravabhava* of *Rasa Dhatu*. This *Rasadushti* leads to *Uttarottara Dhatunirmiti* and finally the manifestation of *Dhatushaithilya* and *Vaivarnya*.

Pandu is also described as disease related to *Rasavaha* and *Raktavaha Srotas*. In *Pandu Roga*, *Panduta* is the main feature which means paleness or the pallor of skin which occurs as a result of qualitative and quantitative deficiency of *Rasadhatu* and *Raktadhatus*. It presents with pallor of tongue, lip, skin, sclera and nails. [37] Fetal requirements increases as pregnancy progresses based on its developmental milestones and hence makes the *Rasa Dhatu* of the *Garbhini* works additionally to fulfil the demands of *Garbha*. *Garbhini* needs to consume healthy food and also the quantity should be increased, but due to unavailability, she lands up in *Pandu*.

Management of Gestational Anemia (Chikitsa of Garbhini Pandu)

Evaluation of the cause and the severity of anemia is required for the successful management of anemia during pregnancy. Some of the factors such as the severity of anemia, additional risks, maternal comorbidity, time remaining until delivery are essential for the right therapeutic approach. [38] The current management of anemia include the oral and parenteral routes through which iron is supplemented and parenteral iron therapy is given intravenous from the second trimester. [39]

In addition to the supplementation, diet and nutrition plays an important role and this should be properly communicated to all pregnant women for preventing anemia in pregnancy. According to CDC, a 30 mg per day iron supplement should be started at the first prenatal visit. Though recommendations varies based on the regions. [40] British guidelines do not recommend any routine iron supplementation in pregnancy, whereas WHO advises 30–60 mg of elemental iron per day for all pregnant women. [41] WHO also states that, when daily iron intake is not possible due to gastrointestinal side effects, weekly intermittent oral iron supplementation can be implemented. [42]

According to the association of Nutrition, the (RDA) of iron for a pregnant woman in third trimester is 30 mg/day. [43,44] For all the pregnant women who are native to the areas of prevalence of hookworm/*Trichuris*, WHO recommends routine deworming using single dose *Albendazole* (400 mg) or *mebendazole* (500mg). [41]

In Ayurvedic science, *Garbhini Pandu* or the gestational anemia is treated effectively. And according

to Acharya Kashyapa, *Garbhini Pandu* is common in *Garbhini* like other disorders. Acharya Haritha has opined about the *Ashta Garbhopradravas* in his *Samhita* among which *Garbhini Pandu* is one among them. *Pandu* is said as a *Rasapradoshaja Vikara* and the term "*Varnatva*" is used to describe *Garbhini Pandu*. According to *Charaka*, *Shodhana* is said as the first line of treatment in *Pandu* due to the involvement of *Tridoshas* but it is contraindicated in *Garbhini*. This *Garbhini Pandu* if not treated properly it will lead to *Dhatu kshaya* and *Dhatu Shaithilya* and eventually leads to prolonged labour, postpartum haemorrhage and death etc intra-natal complications. [45]

Pregnancy is considered a delicate phase in women's life, where even the Doctors avoid medications as it might affect the foetus in the womb. Since the ancient times, even Ayurveda prescribes the same and observes that the treatment should be in the mild form without affecting the foetus and should be easily digestible and having *Snigdha* and *Soumya Gunas*. Medications that are indicated in *Garbhini Pandu* by Ayurveda Acharyas include *Ghrutas* like *Draksha Ghruta*, *Dadimadi Ghruta*, *Katukadi Ghruta*, *Panchatikta Ghruta* and *Mahatikta Ghruta*. *Bhasmas* such as *Abhrakabhasma*, *Vangbhasma*, *Mandoor bhasma*, *Swarnamakshik bhasma*, *Lohabhasma* and *Roupyabhasma*. *Kalpas* like *Tapyadi Loha* and *Navayas Loha*. *Laghmalini Vasanta* and *Madhumalini Vasant* etc *Vasant Kalpas*. These medications are said to enhance both *Jatharagni* and *Dhatvagni* and thereby helps in relieving *Dhatushaithilya* and is very effective in treating *Garbhini Pandu*. Regarding *Pathya* and *Apathya* for *Garbhini Pandu* *Aaahara Padarthas* including *Yava*, *Mudga*, *Masura*, *Shastikshaali*, *Kharjura*, *Guda*, *Mrudvika* and *Jaangal Mansrasa* that are easy to digest needs to be advocated.

Complications (Upadravas)

Any disease if not treated properly will eventually lead to complications that cannot be reversed. In case of *Garbhini Pandu* if it is not managed properly it will lead to complications both to the mother and the foetus like *Dhatu Kshaya*, *dhatu Shaithilya* and intra-natal complications such as postpartum haemorrhage, prolong labour stage and even death. [45]

DISCUSSION

Pandu Roga is considered as a *Tridoshaja Vyadhi* having pitta as the predominant *Pitta Dosha*. This presents with the symptoms such as discolouration of the skin and pallor (*Pandu*) that occurs due to the vitiation of blood (*Vidushya Rakta*) and to reduced blood (*Alpa Rakta*). [46]

In Ayurveda, gestational anemia or the anemia during pregnancy is termed as *Garbhini Pandu* which is

primarily caused due to vitiation *Rasa Dhatu*. During pregnancy, *Rasa Dhatu* has to do its work double the time than in normal individuals. It performs the threefold role such as nourishment of the fetus, breast and the pregnant woman. Due to its multi fold responsibility and stress, during pregnancy, *Rasa Dhatu* fails to compensate the demand of the pregnant woman and hence the pregnant woman gets affected with *Garbhini Pandu*. [47]

Various studies have been conducted on the iron deficiency anemia and shown its efficacy in the general population such as *Dadimadi Ghruta*, *Punarnavadi Mandura*, *Navayasa Lauha*, *Dhatri Lauha*, *Pradarantaka Lauha*, *Sarva-Jvara-Hara Lauha*, *Brihat Yakrdari Lauha* and *Trikatrayadi Lauha*. In gestational anemia, some of the medicines that are proved to be effective through clinical studies include *Dhatrilauha Vati*, *Pandughni Vati*, *Punarnava Mandura* and *Dhatri Lauha*, *Mandura Bhasma*, *Dadimadi ghruta*, *Draksha Ghruta* etc. The present study has made an attempt to discuss in detail about the *Garbhini Pandu* that is delineated in Ayurvedic classics and tried to make a correlation of *Garbhini Pandu* with the gestational anemia of Modern science based on the signs and symptoms.

CONCLUSION

Gestational anaemia is one of common health issue occurring in pregnancy on large scale in developing countries that requires an immediate intervention to save the life of both the mother the child. Ayurveda, an ancient Indian science has given more importance to the women and her health with vast descriptions of pregnancy, labour and its complications with management. Gestational anemia can be correlated to *Garbhini Pandu* that is described in Ayurvedic science. Since the ancient times *Garbhini Pandu* has been treated by the ancient scholars effectively and are being treated presently too. The present study has focussed on delineating the concepts of *Garbhini* and its management and its correlation to gestational anemia of Modern medicine.

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