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**Review Article** 

# MILD PRE ECLAMPSIA (*GARBHINI SHOTHA*) IN PREGNANCY - A CORRELATIONAL REVIEW Sushmita Bakale<sup>1</sup>, Shreyes S<sup>2\*</sup>, Yogitha Bali M.R<sup>3</sup>, Sujatha S. Patil<sup>4</sup>, Bharathi K S<sup>5</sup>

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#### ABSTRACT

Pregnancy in the life of a female is like a beautiful chapter that provides a purpose of living and makes her a complete woman simultaneously. Every female has a beautiful story of their own in their pregnancy which they cherish throughout their lifetime and nobody wants it to be life threatening. Earlier majority of the women were undergoing only the normal delivery due to their food habits and lifestyle practices. Presently C-section has dominated due to modern lifestyle practices, dietary habits and most important stress as the causative factor for the complications of pregnancy. Pre eclampsia being one of the commonest complications during pregnancy is leading to severe morbidity and mortality. Various treatment methods are being followed for the prevention of the same in different systems of medicine. Present study was made to elucidate an in-depth literature of pre eclampsia in ancient system of medicine called Ayurvedic science and to find the possible methods to manage the health issue. Based on the available Ayurvedic literature and the Modern, Pre eclampsia can be correlated to *Garbhini shotha* based on the signs and symptoms including various treatment methods.

#### **INTRODUCTION**

Globally, the prevalence of pregnancy complications is on the high rise associated with severe consequences. In 2009, World Health Organization stated that at least one woman dies and 20 are affected by the complications related to pregnancy or childbirth every minute.<sup>[1]</sup> Incidence of pre-eclampsia is reported to be 8-10% in India, among the pregnant women. In a study conducted in India, the prevalence of hypertensive disorder of pregnancy was 7.8% with preeclampsia in 5.4%. <sup>[2]</sup>

Pre-eclampsia is defined as a maternal health issue that is responsible for both the maternal and neonatal severe morbidity and mortality worldwide. It also contributes to long-term cardiovascular disease

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(CVD) in the mother and prematurity of the foetus.<sup>[3]</sup> According to ISSHP, pre-eclampsia is defined as the presence of new-onset hypertension and proteinuria or other end-organ damage that occurs after 20 weeks of gestation.<sup>[4]</sup> Whereas, development of grand seizures in a woman with preeclampsia is defined as eclampsia. Globally, preeclampsia is said to affect an estimated 4.6% of pregnancies.<sup>[5]</sup>

Pre-eclampsia that occurs after 20 weeks of gestation, affects many organ systems, hence it is called as a pregnancy-specific syndrome that is estimated to complicate 2 to 8% of all pregnancies. <sup>[6]</sup> Despite the fact that the cause is unknown, the pathophysiologic processes underlying the preeclampsia are described in two stages such as: <sup>[7]</sup> Reduced placental perfusion perhaps related to abnormal placentation with impaired trophoblast invasion and inadequate remodeling of the uterine spiral arteries is observed in the first stage and in the second stage, multi-organ damage occurs due to maternal systemic manifestations with inflammatory, metabolic, and thrombotic responses converging to alter vascular function. <sup>[8,9]</sup>

Objectively, pre-eclampsia is defined with the diagnostic criteria such as new onset of sustained elevated blood pressure  $\geq$ 140mmHg systolic or  $\geq$ 90mm Hg diastolic on at least two occasions with 6 hours gap and proteinuria with at least 1+ on dipstick or  $\geq$ 300mg in a 24 hour urine collection occurring first after 20 weeks of gestation <sup>[10]</sup> Earlier diagnostic criterions such as edema and blood pressure elevation are no longer applicable currently under diagnostic criteria. Severe preeclampsia is also characterized by other features such as oliguria, pulmonary edema or cyanosis, cerebral or visual disturbances etc.

For pre-eclampsia, delivery remains the ultimate treatment. <sup>[11,12]</sup> Essential is the timing of the delivery that should be determined considering maternal and fetal risks with clear indications for delivery. <sup>[13]</sup> Vaginal delivery is preferred to avoid the stressors of C-section and regional anesthesia is chosen as it involves less maternal risk.<sup>[14]</sup> The main objective during labour is to prevent seizures and control the hypertension. <sup>[15]</sup> Prevention plays a very important role in the management of pre-eclampsia. Magnesium sulfate is the first choice medication of choice for the treatment of women with eclamptic seizures and prevention of eclamptic seizures in women with severe preeclampsia.<sup>[16,17]</sup> Compared to (Dilantin) and phenytoin diazepam (Valium), magnesium sulfate has shown to be effective in the management of eclamptic seizures. Studies showed inadequacy in the prevention of progression in preeclampsia though it is the common medication prescribed among the pregnant women. [18,19]

Ayurveda speaks about Garbhini paricharya that is well-documented in Avurvedic literature which includes caring of the pregnant women, their Ahara, Vihara, related problems, complications and also the treatment. Garbhini paricharya comprises monthly regimen and practices for each month of pregnancy till delivery. In Garbhini paricharya, Acharyas have advised Pathya Ahara (diet), Pathya vihara (lifestyle) and vichara (thought process) to be followed during pregnancy as these have a direct impact on the mother and the child. Besides this, Ayurveda has narrated about the Garbhopadravas, the complications arising during pregnancy which are eight in number and Garbhini shotha is one among them. Among all the Acharyas, Garbhini shotha as described by Acharya Harita has a similar presentation to pre eclampsia of Modern science. In the present study, an attempt has been made to evaluate in depth study of mild preeclampsia and Garbhini shotha of Ayurveda and analyse its correlation based on the literature.

# *Garbhini Shotha* Aetiology

Pre-eclampsia constitutes a major source of morbidity and mortality worldwide. It is a multisystem disorder that complicates 3%–8% of pregnancies. <sup>[20,21]</sup> The definition of pre-eclampsia has not changed over the past decade with onset at >20 weeks gestational age of 24-hour proteinuria  $\geq$  30 mg/day or a protein concentration  $\geq$  30mg  $\geq$  1+ on dipstick in a minimum of two random urine samples collected at least 4–6 hours but no more than 7 days and a systolic blood pressure >140 mmHg or diastolic blood pressure ≥90 mmHg.<sup>[22,23]</sup> The hypothesis of a genetic and immunological aetiology has been proposed by some epidemiological studies stating the risk of preeclampsia to be 2-fold to 5-fold higher in pregnant women with a maternal history of pre-eclampsia. Medical history of chronic hypertension, age  $\geq$ 35 years, diabetes, obesity kidney disease, and pregnancy characteristics, such as twin or molar pregnancy, previous pre-eclampsia, or fetal congenital abnormality are some of the other causative factors that lead to pre-eclampsia. [24] Nidana

In Ayurveda, aetiology is expressed as *Hetu* or the *Nidana* that discharges multidimensional actions in the initiation of the disease process by aggravating the *Doshas*. The *Hetu* or the *Nidana* of *Shotha* are classified into *Aharaja*, *Viharaja* and *Upadravas*. <sup>[25]</sup>

# Diet induced pre-eclampsia- Aaharaja hetu

Excessive consumption of *Lavana* (salt) and *Amla* (sour) *Rasa dravyas* causes *Kapha*, *Pitta* and *Rakta Dushti*. whereas excessive *Guru* (heavy to digest), *Ruksha* (dry), *Ushna Anna* (hot), *Tikshna* (spicy), *Vidahi*, *Abhishyandi pradhanya ahara dravyas* such as newly harvested cereals and pulses with *Anupa* and *Audaka pishita mansa*, curds, milk products etc causes *Kledak kapha dusthi* and leads to *Shotha*.

# Lifestyle induced pre-eclampsia- Viharaja hetu

Improper lifestyle practices such as day sleep, irregular sleep, being awake at night, late night sleep, excessive daily walking, travelling on vehicles that causes excessive jerks and hanging legs for longer duration while travelling, suppression of natural urges such as *Chardi, Kshavathu, Udgar, Adhovata, Mootra* and *Purisha* etc. All these leads to many diseases including *Shotha* in pregnancy. <sup>[25]</sup>

## **Clinical presentation**

Pregnant woman with pre-eclampsia will have features of cerebral edema such as visual disorders, headache, tinnitus, phosphene signals, brisk tendon reflexes and vigilance disorders. Symptoms such as band-like epigastric pain, subcapsular hepatic hematoma, uterine contractions, vaginal bleeding, placental abruption, oliguria, acute renal failure, vomiting to HELLP syndrome, cardiac failure and dyspnea. <sup>[24]</sup>

## Lakshana

Ayurveda Acharya Charaka narrates the following symptoms of *Shotha* as *Gaurav*- heaviness, *Anavasthitatwa*- intermittent, *Utsedha*- part gets elevated due to accumulation of fluid, *Siratanutwa*prominent blood vessels, *Lomharsha*- horripilations and *Vaivarnyatwa*- discolouration of the edema. <sup>[25]</sup>

# Pathophysiology

Pre-eclampsia involves complex pathophysiology with abnormal placentation as the primary cause and observation of defective invasion of the spiral arteries by cytotrophoblast cells. According to a recent study, in pre-eclampsia, the differentiation process goes awry in which a unique differentiation pathway takes place with the cytotrophoblast invasion of the uterus and the fetal cells adopt certain attributes of the maternal endothelium. <sup>[26]</sup>

## Samprapti

According to Ayurveda, after conception, due to Anartava, the first symptom of pregnancy, *Kleda* formation takes place in the body and as a result of *Garbha masanumasik vridhi*, this *Garbha* leads to *Vataprakopa* of *Margavarodhajanya*. Both the *Kleda* and the *Prakupita vata* moves upwards to *Uttarotara dhatus* and leads to various complications like *Pandu*, *Shotha*, *Albuminurea*, *Akshepaka*, *Dhamani pratichaya* etc. When the same reaches to *Rasavahasrotas* it causes *Dhamani pratichaya* or the hypertension, whereas *Shotha* is caused when the *Doshas* reaches to *Rakta* and *Mamsavaha srotas*. <sup>[25]</sup>

# Sadhya-Asadhyata

## Sadhyatva

*Garbhopadrava shotha* is *Sadhya* as per Ayurvedic science if the *Vyadhi lakshanas* are mild and not severe, if the patient responds well for the treatment, if the disease has a new onset and with *Eka gati* and also if the condition is diagnosed early, the disease is said to be treatable.

## Asadhyata

It is said to be *Asadhya*, if both the mother and the foetus shows the fatal signs and doesn't respond to any treatment. <sup>[25]</sup>

## Complications

These include maternal complications such as eclampsia, HELLP syndrome, acute renal insufficiency, pulmonary edema cerebral and visual disturbance, oliguria, IUGR etc. <sup>[27]</sup>

## Upadravas

Though specific *Upadravas* are not explained by Acharyas, in general *Shotha* is described as a

complication of many diseases such as *Visarpa, Pidaka, Atikarshana, Pandu, Chardi, Alasak, Visuchika, Shwasa, Kushta, Kandu* etc. <sup>[25]</sup>

## Treatment

For the successful management of preeclampsia, delivery is the ultimate curative treatment that includes multidisciplinary approach comprising an obstetrician, an anesthetist, paediatrician and nephrology subspecialists if required. <sup>[22,23]</sup> Severe preeclampsia is managed with dual treatment by preventing both the eclampsia and the harmful effects of elevated maternal blood pressure with the commencement of providing the best care for both child and the mother. The four drugs such as nicardipine, labetalol, clonidine, and dihydralazine are authorized for the treatment of hypertension in severe pre-eclampsia. <sup>[28]</sup>

## Chikitsa

Acharyas have advised that the *Shotha* should be treated as early as possible and at a very early stage, because once it attains the *Daruna* stage it becomes difficult to treat. Like all the other disorders, *Garbhini shotha* should be treated with *Nidana parivarjan* as a first measure by following suitable *Aahara* and *Vihara*. Some of the formulations such as *Devadaru* and *Murva* along with *Anupana* of *Madhu*, *Kwatha* of *Punarnava* root are indicated in *Garbhini shotha*. <sup>[29]</sup>

## Prevention

Pre-eclampsia can be prevented by the detection of modifiable risk factors as a primary prevention by elucidating family history of preeclampsia, immunologic factors, genetic risk factors, nulliparity, factors related to the pregnancy, such as multiple pregnancy, congenital or chromosomal anomalies, a hydatidiform mole, or urinary infection, risk factors associated with maternal disease, a new partner, and demographic factors such as a maternal age >35 years, the obesity, insulin resistance, and diabetes, as well as thrombophilia, and environmental factors such as living at a high altitude and stress etc. Therapeutically, pre-eclampsia can be prevented by anti-platelet aspirin therapy. <sup>[30,31]</sup>

## DISCUSSION

To deliver a healthy offspring without any complications, Ayurvedic science has described in detail about the procedure and practices that needs to be followed by the pregnant women This regimen includes the set of rules and regulations that are to be followed by the pregnant women to avoid indigestion or the *Agnimandya* which is the main cause for all the other *Garbhopadravas* of complications of pregnancy. *Ahara rasa* is the vital factor for cell formation and fetal growth. *Agnimandya* causes formation of indigested *Ahara rasa*, which gets accumulated in mother's body and leads to various symptoms, discomforts or disorders in *Garbhini awastha*, which are termed as '*Garbhopadrava*'. Shotha is one of the *Upadrava* commonly found in *Garbhini-awastha*. Since *Shotha* is related only to the *Garbhini-awastha*, it is called '*Garbhopadrava*'. Shotha in *Garbhavastha* mainly occurs because of *Agnimandya* and this is mostly seen during 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> month of pregnancy as in the 3<sup>rd</sup> trimester, quantity of *Dosha* and mala which comes from *Garbha* is in more quantity. When this *Mala* is not excreted properly from mother, it gets accumulated and creates the problem.

Neither in *Bruhatrayi* nor *Laghutrayi*, we find the description of *Garbhopadrava shotha* except the *Shotha* in general. Acharya Harita was the first person to mention the term *Garbhopadrava* in *Garbhopadrava Chikitsa adhyaya*. According to him, *Garbha* is the only cause of the *Shotha* that occurs during the pregnancy and it disappears after *Prasava*. Acharya Charaka has included *Shotha* in *Ashta mahagada* and Acharya Vagbhat has included mild oedema on feet as a sign of pregnancy. <sup>[32]</sup>

Acharya Kashyapa has described only about the specific treatment of *Shotha*. According to Acharya Vagbhata, *Garbhaopadrava Shotha* is mostly seen in seven, eight and nine month of pregnancy and *Garbhini Shotha* causes fatal effects on *Garbhini* and *Garbha*. As in last trimester quantity of *Dosha* and *Mala* gets increased and gets accumulated leading to *Shotha*. <sup>[32]</sup>

*Madhav nidana* speaks of both general and local *Shotha* and narrates the *Lakshanas* of *Shotha* as *Anavasthtit-shotha* (spreading edema), *Sarvanggaura* (heaviness in body) *Romharsha*, *Siratanutva*, *Ushnasparsha*, *Twankvaivarna* and edema etc which is very commonly observed during the *Garbhavastha*.<sup>[33]</sup> Both Harita Samhita and Kashyapa Samhita has mentioned about *Garbhini Shotha* as one of the *Garbhopadrava*. But Acharya Kashyapa has mentioned only the *Nidanpanchaka* and treatment of *Shotha* in *Garbhini Chikitsa Adhyaya*.<sup>[34]</sup>

Even in Yogratnakara Garbha Roga Chikitsa, Chikitsa is mentioned for Garbhini Shotha and in Rasratna samuchchaya Garbhini Shotha Chikitsa is mentioned in Adhyaya 22 which consists of Garbhini Shothahara Lepa and Kwatha. <sup>[32]</sup>

Ayurveda speaks about *Garbhini paricharya* that is well-documented in Ayurvedic literature which includes caring of the pregnant women, their *Ahara*, *Vihara*, related problems, complications and also the treatment. *Garbhini paricharya* comprises monthly regimen and practices for each month of pregnancy till delivery. In *Garbhini paricharya*, Acharyas have advised *Pathya ahara* (diet), *Pathya vihara* (lifestyle) and *Vichara* (thought process) to be followed during

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#### CONCLUSION

The objective of science and research is to find a solution to a problem by application of systematic methods of treatment principles, evaluation of its methods and interpretation of the significance. Current study focussed on uncovering the solution to a modern problem through ancient medical science called Ayurveda. In spite of many treatments available for the most dreadful problem affecting the pregnant women known as pre-eclampsia, still there is a search for a novel treatment and a measure of prevention for the management of pre-eclampsia. This pre-eclampsia can be correlated to *Garbha shotha* of Ayurvedic science based on the literature available with main focus on the diagnosis and treatment of *Garbha shotha* that can be applied in future studies.

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