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A Critical Review on Understanding and Management of Gestational Hypertension - In Ayurveda.

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ABSTRACT:

The journey of pregnancy is most exciting and filled with joyous in a women's life. It's a gift to every woman of creation and nurturing power. Hypertensive disorders of pregnancy is one of the common complication observed during pregnancy, plays a significant role in maternal and fetal morbidity and mortality. Garbhajanyavishamayata (Pregnancy induced hypertension) is the development of new hypertension in pregnant women after 20 weeks of gestation. They are preventable by early detection and with appropriate treatment and possibly by prevention of disease itself. Ayurveda can definitely contribute in this regard and ensures safe motherhood and healthy child. With an Ayurvedic approach, on looking to the symptoms and understanding etiopathogenesis, Vata dusti is main causative factor in the manifestation of the disease. During progressive stage of disease involvement of other Dosha is seen. Dushya are Hridaya, Dashdhamanya, Sira, Rasa-Raktvahastrotasa, Manovahastrotasa, Rasadhatu, Raktadhatu and Mana, treatment should always be Vatashaman, Pittashamana, Hridya, Shothahara, Garbhasthapaka, Medhya, Brahman, Raktashaman, Balya, Anulomana. As a preventive care, Pathyapathya during Antenatal period is described under the heading of Masanumasika paricharya & what should be avoided is mentioned under the heading of Garbhopaghatakara bhava's. All these regimens were sincerely followed at that time.

Keywords: PIH, Gestational hypertension, *Garbhini*, *Ayurveda*.

INTRODUCTION

Pregnancy is a very crucial period for a woman as many changes take place during this period in woman's body. Among many conditions associated with pregnancy, hypertension is seen commonly now days during pregnancy known as pregnancy induced hypertension, due to increased age of marriage and thus delayed conception. Classically termed as "Garbhajanya vishamayata".

Garbhajanyavishamayata (Pregnancy induced hypertension) is the development of new hypertension in a pregnant women after 20 weeks of gestation, Where it is associated with hypertension and It is a sign of an underlying pathology which may be pre-existing or appears for the first time during pregnancy and it remains an important cause of maternal and fetal morbidity and



mortality. Hypertensive disorders of pregnancy (HDP) remains amongst the most significant intriguing unsolved problems in obstetrics. 5-10% of all pregnancies are complicated with this disorder & 16% of all maternal deaths contribute to this disorder¹. Garbhajanya vishamayata is the major medical problem encountered in pregnancy, where it is associated with hypertension and It is a sign of an underlying pathology which may be preexisting or appears for the first time during pregnancy and it remains an important cause of maternal and fetal morbidity and mortality. It complicates almost 10% of all pregnancies around the world. A report "Global Statistics **INDUCED** HYPERTENSION" -PREGNANCY estimated that Global prevalence of pregnancy induced hypertension among women is 13%. In Asia & Africa, nearly one tenth of all maternal deaths are associated with hypertensive disorders of pregnancy. It is one of the major causes of death among women in their reproductive age group. Pregnancy induced hypertension is seen in approximately 10-20% of all pregnant women in India, according to ICMR studies. Pregnancies complicated by hypertension are associated with increased risk of adverse fetal, neonatal and maternal outcome with maternal aspect it includes preterm birth, acute renal & hepatic failure, antepartum haemorrhage, postpartum haemorrhage and maternal death. In fetal & neonatal it includes intrauterine growth restriction (IUGR), perinatal death. As per principles, in case of unknown disease, the physician should try to understand the nature of disease through dosha dushya & samprapti & should initiate the treatment. So it becomes our prime concern to understand gestational hypertension thoroughly with Ayurvedic perspective. This article makes to understand gestational hypertension in terms of Ayurveda, which will be beneficial for treatment & prevention of such deadly disease & ultimately help reduce maternal mortality & improve fetal outcome. In Ayurveda specific description regarding pregnancy induced hypertension is not there but Acharya Harita mentioned Shopha (odema) as one of the Updravas of Garbha while mentioning Garbhini Vyadhi. The main Dosha responsible for the condition can be taken as Vata specially Vyana Vayu as it is responsible for normal circulation of blood in whole body due to Chala Guna of Vayu. Vata can be increased due to two reasons either Vata Prakopa directly due to intake of Vata prakopaka Aahara Vihara and second by Aavarana, we find most of the symptoms are because of Vata & Pitta vitiation.

On looking into the *Ayurvedic* Classics we find clear description of symptoms related to severe Pregnancy

induced hypertension like Garbhinishotha (Pathological Oedema), Garbhini Aakshepaka (Convulsions), Garbhini mootragraha (Oliguria), Garbhashosha (Intra Uterine Growth Restriction) etc. But these all are present in scattered form and at the same time Aacharyas have mentioned that presence of such features denotes poor prognosis and they had described these features under the Garbhopadravas, heading of Arishta lakshanas, Asadhyalakshanas of Mudhagarbha, which itself indicates the severity of the condition. The description of Hypertension and proteinuria is not present as the reason; may be that the Ayurvedic diagnostic approach is mainly based on symptomatology while these two things are identified by the physician with the help sphygmomanometer and uriner out in investigation respectively.

In Ayurvedic classics during pregnancy Masanumasika paricharya is described in details which is very efficient in preventing the development of PIH in the cases having mild degree of abnormal placentation and is result of faulty life style. So only the cases having severe degree of abnormal placentation manifests at that time and that could be the reason that a cardinal symptom of PIH like Shopha (Oedema) is mentioned under the heading of Garbhopadravas. Kashyapa has also included Shopha (Oedema) in the list of features denoting Arishta Lakshanas that is having bad prognosis.

Aacharya Sharangadhara has described Garbhavyapat out of which description of Upavishtaka and Jaraayudosha are found to be closely related with PIH. The pathophysiology of PIH mimics the pathophysiology of Upavishtaka-Garbhavyapat. For Upavishtaka Aacharyas has mentioned that if pregnant lady continue the use of pungent and hot article after attainment of Sara (after four month) by the fetus then bleeding or other types of vaginal discharges occurs.

Similarly, in *Kroshana Jataharini* the fetus situated in *Kukshi*(uterus) creates various complications. *Kroshana Jataharini* can be considered as an indirect reference of Pregnancy induced hypertension.

Every disease is the resultant of *Dosha Prakopa* and for *Dosha Prakopa Aaharadi* (*Aahara* and *Vihara*) plays a pivotal role. The primitive cause in the vitiation of *Doshas* is the *Ahitasevana* of *Aahara* and *Vihara*. It is not surprising those independent risk factors such as an excessive intake of tea, tobacco cigarette smoking, like *Vata Pitta Prakopaka Nidanas* significantly enhances the incidence of PIH. Our *Aacharyas* have mentioned *Garbhopghatakarabhava* i.e. dietetics and mode of life

contraindicated for pregnant woman². So when pregnant woman follows *Garbhopghatkarabhava* can lead to disease of *Garbhini*. Currently known etiological and provoking factors can be better understood when compared with different etiological factors given in *Ayurvedic* classics.

A. Provoking Factor:

As follows:-

Currently known etiological and provoking factors can be better understood when compared with different etiological factors given in *Ayurvedic* classics

- 1. Potential causes of Hypertensive disorders of pregnancy³.
- 2. Abnormal trophoblastic invasion of uterine vessels or Poor placentation *KroshanaJataharin*⁴, the fetus situated in *Kukshi* (uterus) creates various complications. & with the delivery of the fetus (& placenta) most of the symptoms of HDP disappears. Also *Sharangadhara* has described *Jaraayudosha* under *Ashta-Garbhavyapa*⁵. which can be taken as abnormal formation of placenta. These mark the direct reference of defective placentation (abnormal trophoblast invasion of uterine vessels)
- Immunological intolerance between maternal and fetoplacental tissues *Acharya Sushruta* has denoted *Garbha* as '*shalya*'6(Foreign body). Thus it can create *Shotha* (inflammatory response) in the maternal body which denotes etiopathogenesis of Immunological maladaptive tolerance between maternal paternal (placental) & fetal tissues.
- 1. Excessive intake of Salt⁷: Epidemiologic studies have repeatedly demonstrated a high direct correlation between dietary sodium intake and the prevalence of hypertension. Aacharya Charaka has specially quoted that people of Saurashtra and Bahlika consume more salt in their diet. This type of diet is capable of aggravating Doshas and to do the further progress in the pathophysiology of PIH.
- 2. **Genetic considerations**: HTN is a disease which is an outcome of faulty food regime and lifestyle accepted generation by generation and entered in genetic predisposition group unknowingly which is nowadays is called as X syndrome (*Beeja Dosha/Santana Dosha*). The collective data reveals that there is strong positive relationship between family history and PIH, though it is a multifunctional disease but genetic can constitutional factors also play important role. Genetic and constitutional factors can be compared with *Beejadosha* due to *shukrashonitavikrut*.

- B. Elderly and Young Primigravida: Reason for this could be that Elderly Primigravida is *Pitta*, *Vata* dominant *Avastha* and Young Primigravida is a *Pitta* predominant *Avastha*, in the *Samprapti* (etiopathogenesis) of PIH also *Vata* and *Pitta* plays important role, so *Avastha* (stage of life) helps in manifestation of disease along with this primi women's are unfamiliar with pregnancy changes and code of conducts which should be followed during pregnancy.
- 4. Long intervals between pregnancies (*Nivritta Prasava*)⁸: In *Sushruta Samhita* it is mentioned that after six years of *Nivritta Prasava* (from last six years one who had not delivered baby) if women conceived then born baby does not live for long period. Individual studies show that risk is also increase with an interval of 10 years or more, since a previous pregnancy. Probable reason for this could be that with advancement in age DNA degeneration starts, which may lead to some defect signees that can cause defects information of placenta. This is again *vata* predominant condition. This degeneration can be slowed with *Ayurvedic Rasayana* therapy.
- 5. Environmental factors: The number of environmental factors has been implicated in the development of pregnancy induced hypertension, including Alcohol intake, Smoking and Obesity. These factors have made person more prone to PIH. Alcohol Intake creates *Pitta* dominancy in the body to enhance pathological condition for PIH. Tobacco Smoking may vitiate *Vata* and *Pitta* in the body. It also vitiates the seat of *Pranavaha Srotasa* i.e. *Hridaya*.
- 6. **Psychological factors**: *Chinta* (worry), *Bhaya* (fear), and *Shoka* (grief) these factors have the propensity to vitiate different *Dosha*. *Chinta* (worry) *Vata Prakopa*, *Shoka* (grief) -*VataPrakopa* and *Bhaya* (fear) -*VataPrakopa*⁹.
- 7. **Seasonal Variations**¹⁰: Through researches it is found that the incidence of Eclampsia is significantly higher in monsoon, when the weather is cooler and humid with a lower barometric pressure than there of the year. The probable Ayurvedic answer could be that this is the period of *VataSanchaya*, *VataPrakopa* and *PittaSanchaya*, so *Kaala* helps in manifestation of disease.
- 8. **Low socioeconomic status**¹¹: Pregnancy hypertension, Women of Poor and under privileged sector are malnourished because of nutritional deficiency; they have *DhatuKshaya Avastha* thus *Vata Vriddhi* in the body, which helps in manifestation of disease.
- 9. **Other factors**: Race, ethnicity have also been implicated as predisposing factors in the disease hypertension.
- B. *Purvarupa*: Like *Vaatavyaadhipurvarupa* of HDP are *Avyakta*¹². i.e. absent or non severe form.

- C. *Rupa*: *Uchharaktchapa* (Hypertension): This condition is generally seen in old age which is *Vata* predominant age. Also According to *Sushruta* and *Vagbhata*, *Vyana Vayu* with its seat in *Hridaya* controls functions of *Rasa* and *Rakta Samvahana* in the entire body¹³. In this way *Vyana Vayu* controls B.P. by maintaining blood circulation. Hence Hypertension can be considered as *Vata* especially *Vyana Vaayu* related condition.
- 1. Proteinurea
- **2.** Oedema: *Aacharya Kashyapa* describes *Vaayu* as a main *Hetu* of *Shotha*¹⁴ (odema). Initially oedema is on lower extremities and is relieved by rest, which again denotes *Vaataja* type of *Shotha*.
- **3.** *Garbhini Chardi* (Vomiting): It is present in severe disease only.
- **4.** *Garbhini Mutragaraha* (Oligouria): Due to Oedema the fluid is retained in the body which results into Oliguria, thus it is actually a sequel, not an independent sign.
- 5. Garbhini Shiroroga (Headache): May be occipital or frontal, may be pulsatile or dull, continuous or intermittent. Pain itself is a Vata predominant condition¹⁵ and its nature also denotes Vataja type of Shiroroga with variations as per Anubandha.
- **6.** *Bhrama* (Giddiness): *Pitta* and *Vata* are responsible *PittavruttaVata*¹⁶ also can be the cause.
- 7. *Klama* (Tiredness without work): *VataPrakopa* results in the vitiation of Rasa and *Rakta* which causes *Klama*.
- **8.** *Nidranasha* (Disturbed sleep): can be related to *Vata* and *Pitta vriddhi*.
- **9.** *GarbhiniAakshepaka* (Convulsions): *Aakshepaka* is a *Vatavyaadhi*. They occur more commonly in the third trimester and in 50% of cases fits occur before the onset of labour. More often, labour starts soon after it. ¹⁷ It again denotes *Vatakaala*.
- **10.** *Viparitendriyartha* (Visual Disturbance): *Dalhana* has mentioned it in the symptoms of *AsadhyaMudhagarbha*¹⁸.
- 11. Anushanghika Lakshana's
- i. *Vamana* (Emesis)
- ii. Atisara (Diarrhoea)
- iii. Mutralpata (Mutraghata)

Mukhyalakshana's (cardinal features)19

Shopha (odema) as a garbhini upadrava.

Akshepa (convulsions)

Moorcha (giddiness) Asadhyalakshanas of mudhagarbha

D. *Upashaya: Aushadhi, Aahara* and *Vihara* which are helpful in *Shamana* of diseases, called as *Upashaya*²⁰.

- 1. Rest (In left lateral position)
- 2. Nutritious diet
- 3. Avoidance of excessive sodium diet (Ati-lavana Rasa)
- 4. No smoking
- 5. Pranayama and Yoga
- 6. Mentally cheerful conditions

Following GarbhiniParicharya All Upashaya are Vata and Pitta shamaka

E. Anupashaya Anupashaya are:

- (1) Vatakara Aahara-Vihara.
- (2) Excessive intake of Lavana
- (3) Excessive exercises
- (4) Stress, strain etc.
- (5) Ratrijagrana, Divasvapa
- (6) Vyavaya All Anupashaya are aggravating Vata and Pitta

Understanding Etiopathogenesis of Pregnancy induced hypertension from *Ayurvedic* Point of view:

Though there is no direct reference regarding hypertension during pregnancy in *Ayurvedic* classics. This pathology develops as a direct result of "Gravid state" & affecting the functioning of various systems that can be encountered in different disease conditions of *Ayurveda*.

In Ashta Garbhopadravas (Eight complications in pregnancy) Shopha (Oedema) and Vivarnatva (pallor) are the symptoms which are found in the patients of Pregnancy induced hypertension, Vivarnatva may occur due to anemia or blood loss. Blood loss may occur due to APH in the form of Abruptio-placentae which is a common complication of Pre-eclampsia. Kashyapa has also mentioned specific treatment of Shopha and Shopha is also included in the list of features denoting Arishta Lakshanas. Kashyapa has described Oedema presents on legs and face of the pregnant lady under the Asadhyalaxan of Mudhagarbha (complicated position of fetus). Aacharya Sushruta and Vagbhata have described Viparitendriyartha (abnormal function of sense organs) in the Asadhya Lakshanas of Mudhagarbha. Visual disturbances are common with severe pre eclampsia blindness is rare with pre eclampsia alone. Thus Viparitendriyartha can be correlated with visual disturbances. Another very common finding in women with moderate or severe preeclampsia is fetal measurement 2-4weeks less than expected for Gestational age, suggesting the presence of fetal growth restriction. Aacharya Charaka, Sushruta and Vagbhata have also mentioned the condition of Garbha Shosha in different

manners. Garbha Shosha can be compared with intrauterine growth restriction. But they all have told that vitiated Vata is the cause of Garbha Shosha. Vata aggravated due to this bleeding with holding Pitta and Shleshma compresses or obstructs the Rasavahi-nadi of the fetus. Obstruction to Rasavahinadi causes improper flow of Rasa and the fetus does not develop properly. Arunadatta specifying the period of disease says that it occurs when the fetus has become Balavana(strong i.e. 5th or 6th month). Aacharya Vagbhata has further described that even at this stage if pregnant lady keeps on faulty life style, then according to Nidana vitiation of Dosha occurs and lady suffers from different problems according to the vitiated Dosha. Aacharya has described different symptoms which appear on vitiation of specific Doshas. Oliguria is a condition which develops in later stage of Preeclampsia. Kashyapa and Harita had described the treatment of Mutragraha developed in Garbhini. Kashyapa has described specific treatment for Aakshepaka and Apatantraka in Garbhini. While describing the Asadhya Lakshanas of Mudhagarbha Sushruta and Vagbhata have mentioned Viparitendriyartha (Perception of non-existent or opposite things by sensory organs), Aakshepa Shvasa (Dyspnea) and (Convulsions), Bhrama (Giddiness) which are present in Eclampsia. Kashyapa has described management of Fever, Dyspnea, Jaundice, Anuria, Abdominal pain, etc which are considered as ominous features of Eclampsia. Sushruta has described panchabhutikatva of raktadhatu in which spandan gun is karma of vayu mahabhuta. Dalhan has also commented that spandan means "kinchitchalanam"²¹

If anyhow this *chal gun* of *rakta* is increased,it becomes one of the pathophysiological factors of gestational hypertension &can manifest high blood pressure. In *Ayurveda* whole blood is stated as "*apyabhava*" of body & *rakta-dhatu* is considered under rasa *dhatu* by *chakrapani*²² Hence *Rasa Rakta dhatu* are chief involved *dushya* in symptomatology of gestational hypertension. *Kashyapa* has explained that the *rasadhatu* formed by mother has three functions²³.

- a) Poshan of mother
- b) Poshan of garbha
- c) Formation of stanya

When due to nutritional deficiency *rasakshaya* takes place, it leads to vitiation of *vata* & it ultimately results in *shotha* & hypertension. Main site of *vayu* is *pakvashaya*. After 5thmonth when fetus starts growing up in abdomen, uterus puts pressure on *pakvashaya*, it causes vitiation of *vata*, leading to development of *shotha*.

Samprapti- ghatak:

- Dosha Vata pradhan tridosha
- Dushya Rasa, Rakta
- Agni Jatharagni, Dhatavaagnimandya
- Strotas Rasa, rakta
- Stroto dushti prakar Sanga
- Udhbhavstha Amashaya,pakshyasa
- Vyaktasthana Sarvasharir
- Rogmarga Bahyamadhyam
- Avayava Hridayadhamani
- Sadhyasadhya Kricchasadhya

Ashepaka, Garbhinia patantraka, Garbhinia patanaka, Mudhagarbha, Jataharini Garbhashosha Garbhiniarishta lakshanas are the conditions which give some understanding of HDP. Vata dusti is main causative factor in the manifestation of the disease. As disease progresses involvement of other Dosha is seen. As Dushya are Hridaya, Dash dhamanya, Sira, Rasraktvahastrotasa, Manovahastrotasa, Rasdhatu, Raktdhatu and Manna, treatment should be Vaatashaman, Pittashamana, Hridya, Shothahara, Raktashaman, Balya, Anulomana. Here we can give another hypothesis related to Samprapti of disease that Dosha Dushya Sammurchhana also takes place at the placental site after which some Vishama entity may generate in modern which is termed as pressor substances and free radicals which when again reaches into circulation aggravates the pathogenesis. Dosha By correlating clinical features of gestational hypertension according to modern & predominant dosha according to Ayurveda it can be asserted that the disease Gestational Hypertension is vata pradhan tridosha jvyadhi.

- 1. Oedema Vata + Kapha
- 2. Headache Vata+ Pitta
- 3. Palpitation *Vata*
- 4. Insomnia Pitta + Vata
- 5. Easy fatigability -Vata + Pitta
- 6. Fainting Pitta + Vata
- 7. Dizziness Vata
- 8. Blurring of vision -Vata + Pitta

Constriction of vessels – *VataDushya* (*Adhishthan*): By taking all symptoms& pathophysiology of Gestational hypertension in consideration following structures can be included in *adhisthan*.

- a. Hridaya
- b. Dash dhamanya
- c. Sira
- d. Rasraktvahastrotasa

- e. Manovahastrotasa
- f. Rasdhatu
- g. Raktdhatu
- h. Mana

Preventive measures and treatment:

Various medicines are mentioned in modern science for treatment of pregnancy induced hypertension but Ayurvedic medicines are found to be successful to treat this condition. It is preventable by early detection & appropriate treatment & possibly by prevention of disease itself. So, it becomes our responsibility to prevent these disorders through Ayurvedic approach by ensuring safe motherhood & healthy child & to decrease maternal & fetal mortality. Modern science also believes that best thing to manage the syndrome is to prevent it, but how to prevent; Ayurveda can contribute in this regard to the world. On looking to the symptoms present in this disorder with an Ayurvedic approach, we find most of the symptoms are because of Vata and pitta vitiation, So drug having properties of Vata pitta Shamana, Hridya, Shothahara, Garbhasthapana, Balya and Brimhana Vatanulomaka, Vatashamana, MriduVirechana, Raktashodhaka, Anulomana, Rechaka(in case of Aavrana Janya Prakupit Vata), agnideepana, pachaka, Medhya and Nidrajanana, Nidanaparivarjana Chikitsa are helpful in PIH. (Garbhajanyavishamayata).

1. Shamana line of treatment.

Some of the Shamana Aushadhi's:

- 1. Gokshuraadiguggulu
- 2. Gokshuradi choorna
- 3. Punarnava mandura
- 4. Sarpagandhadi Yoga
- 5. Yashtimadhu choorna + guduchi satva kashaya
- 6. Balajeerakadikashaya
- 7. Punarnavadikashaya
- 8. Punarnavarishta
- 9. Rasaushadhi's
- 10. Swarnamalinivasantarasa
- 11. Prabhakaravati
- 12. Ghrita
- 13. Pippalyadi ghrita
- 14. Kalyanaka ghrita
- 15. Mahapaishachaka ghrita
- 16. Panchagavya ghrita

Garbhiniparicharya as pathya apathya:

As a preventive care, *Pathyapathya* during Antenatal period is described under the heading of

Garbhiniparicharya comprises of Masanumasikpathya (month wise dietary regimen), Garbhopaghatakarbhavas (activities and substances which are harmful to fetus) and Garbhasthapakdravyas (substances beneficial for maintenance of pregnancy). The main intend behind advising Garbhini Paricharya is Paripurnatya (provide proper growth of the fetus and mother), Anupaghata (uncomplicated pregnancy), Sukhaprasava (for normal healthy delivery and healthy child of desired qualities and longevity)²⁴.

All these regimens were sincerely followed at that time. These are efficient in preventing PIH in the cases having mild degree of abnormal placentation and are result of faulty life style.

DISCUSSION

Based on the above statement intervention during pregnancy which includes detection of pregnancy induced hypertension may improve Maternal & Fetal outcomes. Pathyapathya during Antenatal period is described under the heading of Masanumasika paricharya & what should be avoided is mentioned under the heading of Garbhopaghatakarabhava's. All these regimens were sincerely followed at that time. These are efficient in preventing PIH in the cases having mild degree of abnormal placentation & are result of faulty lifestyle. So only the cases having severe degree of abnormal placentation or in which women indulges herself in faulty life style manifests at that time and that could be the reason that cardinal symptoms of PIH are described under headings like Arishtalakshanas, Upadravas, Vyapat, Asadhyalakshanas of Mudhagarbha.

CONCLUSION

If the Garbhini follows GarbhiniParicharya and neglects Garbhopaghatakarabhavas, most of the diseases in pregnancy may be prevented. Meticulous description of various regimes for Preconception, Antenatal and Post delivery Period in Samhita is for the purpose of prevention of pregnancy-induced hypertension (PIH) Pre-eclampsia and eclampsia which helpful for health of mother and fetus. On looking to the symptoms present in these disorders with an Ayurvedic approach, we find most of the symptoms are because of Vata Pitta vitiation i.e vyana vayu and raktadushti, Manasikadosha rajas and tamas. So drug having properties of Vatapitta Shamana, Hridya, Raktashodhaka, Anulomana, Rechaka (in case of Aavrana Janya Prakupit Vata), Medhya, Nidrajanana and

Vatashamaka properties. Shothahara, agnidipaka, Garbhasthapana, Balya and Brimhana are also helpful in PIH. Identification of condition in an initial stages can prevent the complications and for better management.

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