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Intrahepatic Cholestasis Of Pregnancy: Modern Insights And Ayurvedic Therapeutic Approaches

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Abstract: Intrahepatic Cholestasis of Pregnancy (ICP) is a hepatobiliary disorder occurring typically in the late second and third trimesters. It is characterized by pruritus, elevated serum bile acids, and abnormal liver function tests, with potential risks such as preterm birth and fetal demise Prevalence: 0.2 - 2% of Pregnancies. It poses significant maternal discomfort and is associated with adverse perinatal outcomes such as Preterm Birth, Fetal Distress, and Sudden Intrauterine Fetal Demise. The exact etiology is Multifactorial, involving Genetic predisposition, Hormonal Influences, and Environmental factors. From an Ayurvedic standpoint, ICP closely correlates with Pittaja Vyadhi, Yakrut Vikara of Garbhini particularly involving Kamala (jaundice) and Pittaja Kandu (itching), resulting from Pitta Dushti and obstruction of Raktavaha and Pittavaha Srotas. The condition is primarily driven by Agni Mandya and Ama formation, which further exacerbate the accumulation of morbid Pitta in the Yakrita (liver). Ayurvedic management emphasizes Pitta Shamana (pacification of Pitta), Rakta Shodhana (blood purification), and Yakrit Uttejaka (liver stimulation). Dietary modifications focusing on Madhura, Sheeta, and Snigdha qualities, alongside lifestyle practices that reduce heat exposure and mental stress, are crucial to balance Pitta and ensure maternal well-being. Pre-Conceptional administration of Shodhana, Rasayana and adherence to appropriate Pathya may help in preventing the occurrence of Intrahepatic Cholestasis of Pregnancy (ICP).

Keywords: ICP, Garbhini Kamala, Garbhini Paricharya

I. INTRODUCTION:

Pregnancy is a dynamic physiologic state characterized by profound anatomical, physiological and biochemical adaptations. Many of these gestational changes begin soon after fertilization and continue throughout the pregnancy to support fetal development and maternal wellbeing. [1] Intrahepatic cholestasis of pregnancy (ICP) referred to as Obstetric Cholestasis (OC) this condition has been called Recurrent Jaundice of Pregnancy, Cholestatic Heptoses and Icterus Gravidarum is a liver disorder that usually develops in the later stages of the second trimester or during the third trimester.[2] The condition is characterised by severe pruritic, elevated serum bile acid levels and abnormal liver function tests. It is associated with increased risks of adverse perinatal outcomes such as Stillbirth, Fetal Asphyxia, Meconium-Stained Amniotic Fluid and Neonatal Respiratory Distress[3]. The Global Incidence of ICP varies widely from 0.1 to 15.6% depending on geographical and ethnic factors. [4] In Asian Indian women, Incidence is reported to be around 4.4% [5] From an Ayurvedic standpoint, Intrahepatic Cholestasis of Pregnancy (ICP) can be closely correlated with Garbhini Kamala [6], a condition rooted in Pitta Dushti and Rakta Dushya. Kamala is identified as a Pittaja Nanatmaja

Vyadhi [7] . During pregnancy, due to altered Agni and accumulation of ama, morbid pitta gets localized in the Yakrit, leading to signs and symptoms like Haridra Netra (yellowish discoloration of eyes), Haridra Twak (yellowish skin), and Pittaja Kandu (itching due to aggravated Pitta). This condition is more commonly seen in women of Pitta Prakriti, and those who consume Pitta Vardhaka Ahara (hot, spicy, sour foods) and engage in Pitta Vardhaka Vihara (excessive exposure to heat, stress, and irregular lifestyle) during pregnancy, further increasing the risk of developing Garbhini Kamala. Hence, proper dietary and lifestyle guidance aligned with Pitta Shamaka principles is essential for prevention and management, additionally, pre conceptional Shodhana followed by antenatal administration of Rasayana plays a preventive role

AIMS AND OBJECTIVES:

• To Conceptually explore the correlation between Intrahepatic Cholestasis of Pregnancy (ICP) and Garbhini Kamala as described in Ayurveda, and to analyse Ayurvedic principles and therapeutic approaches that may contribute to its prevention and management.

• To highlight the role of Garbhini Paricharya and Rasayana therapy in the prevention of ICP

MATERIALS AND METHOD:

STUDY DESIGN:

This is a conceptual based on classical Ayurvedic texts, Modern Medical Literature and Relevant Scientific Research articles.

No clinical or experimental work was conducted

METHODOLOGY:

Modern Review of ICP

Pregnancy is a physiological condition during which a woman undergoes a series of systemic changes in response to the presence of the growing fetus, placenta, and associated hormonal milieu. [8]

Intrahepatic cholestasis of pregnancy is a pregnancy-specific liver disorder, usually occurring in the third trimester, characterized by generalized pruritus (especially on palms and soles), raised serum bile acids, and abnormal liver function tests. [9] The condition resolves soon after delivery. The gallbladder increases in size and empties more slowly during pregnancy but the secretion of bile is unchanged. Cholestasis is almost physiological in pregnancy and may be associated with generalized pruritus but only rarely produces jaundice.

Physiological Changes in Gallbladder Function During Pregnancy and their role in Intrahepatic Cholestasis of Pregnancy (ICP)[10]

During normal pregnancy, significant hormonal and physiological adaptation occur in the hepatobiliary system. One of the notable changes is the increase in gallbladder volume by approximately 50%, along with a marked decline in gallbladder contractility. These changes result in a greater residual volume of bile within the gallbladder after meals, predisposing to bile stasis. This phenomenon is largely attributed to the high levels of circulating progesterone, that exerts a relaxing effect on smooth muscles, including the gallbladder wall. Progesterone is believed to inhibit Cholecystokinin (CCK)- mediated smooth muscle stimulation, which is essential for initiating gallbladder contraction in response to food intake- particularly fat. Since CCK is the primary physiological regulator of gallbladder contraction, its inhibition leads to impaired gallbladder emptying, further promoting stasis of bile. Moreover, during pregnancy the composition of bile also changes, Cholesterol saturation of bile increases. This combination of bile stasis and cholesterol rich bile favourable environment for formation of biliary sludge and gallstones and can contribute to cholestatic conditions such as ICP. ICP is observed in late second and third trimester and is more prevalent in multifetal gestations.

ETIOLOGY:

The exact cause of intrahepatic cholestasis of pregnancy (ICP) remains unclear, but it is believed to involve a complex interplay of factors, including genetic predisposition, hormonal influences, and environmental contributors.

❑ **Genetic**- Recent studies have shown evidence of mutations in genes (ABCB4) encoding hepatobiliary canalicular

translocator proteins called multidrug resistance 3 (MDR3) Some other genes which seem to play a role in the development of ICP are ATP8B1(FIC1), ABCB11 (BSEP), ABCC2, and NR1H4 (FXR) [11]

❑ **Hormonal**- the involvement of reproductive hormones in the development of ICP. Elevated Estrogen levels, commonly seen in conditions like multiple pregnancies, ovarian hyperstimulation, also seen in women taking contraceptive pills high in Estrogen quantity.

❑ **Environmental Conditions**- Diet such as rich in Lipid, High Carbs

PATHOPHYSIOLOGY:

Factor	Pathophysiological Changes
Hormonal Influence	↑ Estrogen & progesterone during pregnancy ↓ bile acid transporters (e.g., BSEP, MDR3) in liver
Genetic Predisposition	Mutations in genes like **ABCB4 (MDR3)** or **ABCB11 (BSEP)** affect bile acid excretion
Impaired Bile Flow	↓ Bile secretion → bile acid accumulation in hepatocytes → cholestasis
Bile Acid Accumulation	↑ Serum bile acids → spill into bloodstream → deposit in skin → **pruritus**
Hepatocellular Dysfunction	Mild ↑ liver enzymes (ALT, AST) due to bile acid-induced hepatocyte injury
Fetal Effects	↑ Maternal bile acids cross placenta → fetal arrhythmia, hypoxia, preterm Labor, stillbirth
Placental Effects	Bile acids → vasoconstriction of chorionic vessels → ↓ placental perfusion

CLINICAL FEATURES:

Feature	Details
Primary Symptom	**Pruritus** – Intense itching, worse at night, mainly on palms and soles; starts after 30 weeks
Additional Symptoms	Nausea, anorexia, fatigue, RUQ pain, dark urine, pale/clay-coloured stools
Jaundice	Uncommon (14–25%), appears 1–4 weeks after pruritus onset
Sleep Disturbance	Insomnia due to severe nocturnal itching
Physical Exam Findings	Typically normal; may see **scratch marks** from itching
Assisted Reproduction Context	IVF-related OHSS can cause transient symptoms in 1st trimester; ICP symptoms persist later

DIAGNOSIS:

Clinical Features	**Pruritus in late 2nd or 3rd trimester (especially Palms & Soles)** ● Nausea, fatigue, ● Dark-coloured urine, ● Pale/clay-coloured stools
Investigations	**Liver Function Tests (LFTs):**
	● Total Serum Bile Acids – Most sensitive & specific marker
	● **>10–14 µmol/L** → diagnostic threshold
	● **>40 µmol**/L → ↑ risk of fetal complications
	● **ALT & AST** – Mild elevation, usually < 2× upper limit of normal
	● **Alkaline Phosphatase (ALP)** – Often ↑ 4×, but not diagnostic in ICP

MANAGEMENT:[12]

- ❑ Pruritus – may be troublesome and is thought to result from elevated bile salt concentration. Antihistamines and Topical Emollients offer partial symptomatic relief.

- ❑ Cholestyramine has shown some effectiveness in managing pruritus in ICP; however, it can impair the absorption of fat-soluble vitamins, particularly vitamin K, potentially leading to fetal coagulopathy and intracranial haemorrhage and even still birth
- ❑ Currently, the most widely accepted treatment for ICP is Ursodeoxycholic Acid (UDCA). It effectively alleviates pruritus and significantly reduces elevated serum bile acids and liver enzyme levels.
- ❑ **Ursodeoxycholic acid (UDCA)** – DOC for **ICP**

  Dose- Start - 300 mg BID can be Increased - 300 mg TID until delivery.

  Recommended oral dosage is -10-15mg/kg in 2-3 divided doses. **side effects** -are nausea, vomiting, and diarrhoea.

ANTEPARTUM MANAGEMENT OF ICP:

- Evidence suggests that maternal serum bile acid levels exceeding 100 µmol/L are strongly associated with an increased risk of adverse fetal outcomes, including Meconium-stained amniotic fluid and Intrauterine fetal death. The mechanism is believed to involve cardiotoxic effects of elevated bile acids, which can lead to fetal cardiac dysfunction, cardiac arrest results in stillbirth.

- Although there is limited evidence supporting the effectiveness of antepartum fetal surveillance in ICP, weekly biophysical profile (BPP) is commonly used to monitor fetal well-being. Current antenatal test has not been proven to predict or prevent adverse outcomes, but many clinicians still consider regular monitoring reassuring.

TIMING OF DELIVERY: [13]

- Early elective delivery is often recommended in ICP to reduce the risk of sudden fetal death with timing based on weighing fetal risk against prematurity.
- Delivery before 37 weeks of gestation, if
  - -Maternal symptoms along with jaundice not improving with medications
  - - Previous H/O - IUFD before 37 weeks secondary to ICP
  - - Total serum bile acid >100 micromol/L
- ICP is not an indication for Caesarean delivery.
- Postpartum pruritus disappears by 2-3 days following delivery
- ICP is not a contraindication for breastfeeding.
- Monitoring and follow up of LFT and bile acids done in 4-6 weeks to ensure resolution.

AYURVEDIC PERSPECTIVE OF ICP:

Garbhini Kamala closely resembles Intrahepatic Cholestasis of Pregnancy (ICP) described in modern medicine. In Ayurveda, *Kamala* is identified as a *Pitta*-predominant disorder, classified as a *Pittaja Nanatmaja Vyadhi* [14] and also considered as *Raktapradoshaja Vikaara*, primarily caused by the vitiation and accumulation of *Pitta Dosha*, along with *Rakta Dushti*.

Garbhini kamala is one among the *Garbhini Vyadhi*.[15] Women of *Pitta Prakriti* are naturally more prone to developing *Garbhini Kamala* due to their inherent *Pitta* dominance. The consumption of *Pitta-vardhaka Ahara*—such as spicy, sour, oily, and fermented foods—along with *Pitta*-aggravating *Vihara*—like excessive heat exposure, emotional stress (anger), and irregular sleep patterns—can vitiate *Tikshna Agni*, leading to *Agni Mandya* (impaired digestion). This dysfunction promotes the formation of *Ama* (metabolic toxins), which further disturbs *Pitta Dosha*, causing its accumulation in *Rasa* and *Rakta Dhatus*, ultimately resulting in the manifestation of *Garbhini Kamala*.

Samprapti Ghataka* of *Bahupitta Kamala in Pregnancy:

Dosha: *Pachaka Pitta, Ranjhaka Pitta*

Dushya: *Rasa, Rakta, Mamsa*

Udbhavasthana: *Koshta (Yakrut)*

Adhishthana- *Yakrit*

Srotodushti- *Rasavaha, Ratavaha and Annavaha*

Agni- *Jatharagni, Rasadhatwagni, Raktadhatwagni*

Sadhya *Asadhyata*- *Kashtasadhya*

Srootodushti Lakhana- *Atipravrutti, Vimargamana*

Marga- *Bahya and Abhyantara.*

***Bahupitta Kamala*:**

Due to *Dhatuagni Mandya*, there is excessive formation and accumulation of *Pitta*, leading to *Rakta Dhatu Dushti*. This vitiated *Pitta*, in its *Malaswarupa* , circulates along with *Rasa* and *Rakta Dhatu* throughout the body. As a result, classical features such as *Netra Peeta* (yellowish eyes), *Mukha Peeta* (yellowish discoloration of the oral mucosa), and *Twak Peeta* (yellow skin) manifest. When this morbid *Pitta* localizes in the *Basti*, *Amashaya*, and *Pakwashaya*, it results in *Peeta Mutrata* (yellow urine) and *Peeta Purisha* (yellow-colored stool), indicating systemic involvement of the vitiated *Pitta*.

Ayurvedic Approach to the Management of ICP:

a) Preconceptionally Shodhana**:**

b) Rasayana Therapy During Pregnancy

c) Garbhini Paricharya

d) Pitta Shamaka Ahar-Vihara**:**
Avoid *Pitta-vardhaka* food: oily, spicy, fermented items.

Intake: Grains/Legumes: *Godhuma (wheat), Mudga (green gram), Masura (lentil). Dugdha, Go-Ghrita, Takra*
Fruits: *Dry plum, Khajur (dates), Musk melon, Apple, Jujube, Raisin, Fig, Pomegranate.*

A. Preconceptionally Shodhana: Preventive Approach for ICP and Liver Disorders:

Preconceptionally *Shodhana* is a crucial preparatory phase that strengthens a woman's body for healthy conception and pregnancy. Panchakarma, as part of *Beeja/Garbha Saṃskāra*, plays a pivotal role in preparing the reproductive system for healthy conception. Procedures like *Virechana* and *Basti* effectively eliminate systemic toxins and balance Doshas, thereby improving gamete quality, hormonal harmony, and uterine receptivity. This Shodhana-based approach, integrated into preconception care, demonstrates promise in reducing the risk of gestational complications such as ICP and promoting optimal maternal and fetal outcomes

Snehapana: Improves weak *Agni*, strengthens *Indriyas*, nourishes tissues (*Ojakara*, *Balya*, *Pushtikara*).

Svedana: Enhances *Agni*, clears *Srotas*, pacifies *Vata*.

Vamana: Eliminates *Soumya* (Kapha-related toxins), clears *Srotas*.

Virechana: Cleanses *Pitta* from *Amasaya* and the liver, key in preventing Pitta-vitiated liver disorders like ICP.

Basti: Corrects *Vata*, preventing many reproductive and hepatic imbalances.

Virechana and Basti are particularly beneficial in the prevention of hepatic disorders and reproductive system imbalances, making them integral to *Preconceptional Garbha Samskara*.

B. Importance of Rasayana During Pregnancy:

Rasayana therapy, when initiated from the second trimester, plays a key role in stabilizing maternal physiology, enhancing immunity, and promoting foetal development.

Acharyas have emphasized the use of *Madhura Rasa, Sheeta Virya, Madhura Vipaka* Rasayana drugs, especially those with hepatoprotective action to support liver health and prevent complications like ICP.

Key Rasayana Dravyas with hepatoprotective property:

Guduchi – *Kamalahar, Medhya, Rasayani,* proven to normalize liver function

Bala – *Raktapitta Shamak, Balya, Rasayana*, strengthens and protects maternal tissues.

Punarnava – *Shothahara, Balya, Deepana*, supports renal and liver health, reduces edema.

Amalaki – *Rasayana, Antioxidant*, boosts immunity and supports liver detox.

Shatavari- *Stanyajanana, Balya, Rasayana, Pittahara, Shukrala, Garbhasthapaka*

Draksha- *Garbhasthapana, Jeevaniya, Raktaprasadana, Balya*

Yashtimadhu- *Rasayana, Kantya, Pittahara, Shukrajanana, Balya.*

These herbs not only rejuvenate maternal tissues but also ensure a safe intrauterine Environment for the Fetus. Rasayana is thus a vital aspect of *Antenatal Ayurvedic Care*.

C. GARBHINI PARICHARYA:

MONTH	CHARAKA [16]	SUSHRUTA [17]	VAGBHATA [18]	HARITA [19]
1	*Anupasamskrita Ksheer* (Nonmedicated Milk) according to her *Agni* and *Bala*	*Madhura*(sweet), *Sheeta*(cold), *Drava* (Liquid) *Ahara*	*Samskrita Ksheer* (Medicated milk) For first 12 days advised *Ghrita* (Ghee) medicated with Shalaparni, prshnaparni	*Madhuyashti*, *Madhukpushpa*with butter, honey and sweetened milk
2	*Samskrita Ksheera* (milk medicated with *Madhura Aushad*)	Same as 1st month	Same as *Charak*	Milk medicated with *Kakoli*
3	Milk with *Madhu* (honey) and *Ghrita*(ghee)	Same as 1st month	Same as *Charak*	*Krishara* (a dish prepared with rice and pulses)
4	*Navaneeta* (Butter) extracted from milk or milk with *Navaneeta* (Butter)	Cooked *Shashti shali*(rice) with curd *Ksheera* (milk) with *navneeta* (butter) *Jangala mamsa rasa Hrdyabhojana*(Wholesome food)	Same as *Charak*	Medicated cooked rice
5	*Ksheeruddhita Ghrita* (Ghee) prepared with butter extracted from milk	Cooked *Shashti shali* (rice) with milk, *Jangala mamsa* -meat of wild animals	Same as *Charak*	*Payasa* (rice cooked with milk and sweetened)

6	*Madhura aushad siddha khseera with ghrita-Ghrita* prepared from milk medicated with *Madhura dravyas*	*Ghrita* or *Yavagu* (rice gruel) medicated with *Gokshura*	Same as *Charak*	Sweetened curd
7	*Madhura aushad siddha khseera with ghrita-Ghrita* prepared from milk medicated with *Madhura dravyas*	*Pruthakparnyadi siddha ghrita* (Ghrita medicated with *Prithakparnyaadi* group of drugs)	Same as *Charak*	*Ghritakhand*a (sweet dish)
8	*Yavagu* (rice gruel) prepared with milk and mixed with Ghrita	*Asthapana basti*(decoction of *badari* mixed with *bala, atibala, shatapushpa, patala*, milk, curd, *mastu*, oil, salt, *madanphala*, honey and ghrita) followed by *Anuvasana Basti* (oil medicated with milk & decoction of *madhuradravyas*)	*Yavagu* (rice gruel) prepared with milk and mixed with Ghrita, *Asthapanabasti, Anuvasanabasti*	*Ghritapuraka* (a kind of sweet preparation
9	*Anuvasanabasti* (oil medicated with milk & decoction of *madhuradravyas*), *Yoni pichu* (Vaginal tampon of oil)	*Asthapana basti,Madhura, snigdha dravya ahara*	Same as *Charak*	Different varieties of cereals

Preventing ICP through Garbhini Paricharya

- ✔ Intrahepatic Cholestasis of Pregnancy (ICP), being more prevalent during the second and third trimesters, can be thoughtfully correlated with the month-wise *Garbhini Paricharya* described by the Acharyas.
- ✔ Ayurveda emphasizes the use of *Ksheera* (milk), *Ghrita* (ghee), *Shastika Shali*, and *Madhura Aushadha*-siddha preparations such as *Vidaryadi Gana Siddha Ghrita* and *Prithakparnyadi Ghrita* during these trimesters.
- ✔ These formulations are *Pittashamaka*, *Brahmana*, and *Balya*—ideal for maintaining hepatic balance and overall maternal-fetal well-being.
- ✔ This ancient monthly regimen not only nourishes but may also help in preventing disorders like ICP by aligning dietary and lifestyle practices with the physiological needs of each stage of pregnancy.

DISCUSSION

Intrahepatic Cholestasis of Pregnancy (ICP) is a unique pregnancy-specific hepatobiliary disorder that poses significant risk to both maternal and fetal health. Despite its typically self-limiting nature post-delivery, ICP requires timely diagnosis and management to prevent adverse perinatal outcomes such as fetal distress, preterm labor, and intrauterine fetal demise. The primary pathological mechanism is the accumulation of bile acids due to impaired bile flow, exacerbated by hormonal and genetic factors.

From an Ayurvedic perspective, this condition shows close resemblance to *Garbhini Kamala,* a *Pitta*-dominant disorder involving the *Yakrit* (liver), *Rasa-Rakta Dushti*, and *Srotorodha* (obstruction in body channels). The classical description of *Bahupitta Kamala*, especially its *Koshthashrita* form (originating in the gut and liver), matches the pathophysiology of ICP, which is centred around bile acid metabolism and hepatic dysfunction.

Modern management focuses mainly on symptomatic relief and fetal protection through the use of Ursodeoxycholic acid (UDCA) and timely delivery planning. However, this approach often neglects preventive care and long-term maternal health.

In contrast, Ayurveda offers a multidimensional framework incorporating *Swasthavritta* (preventive), *Rasayana* (promotive), and *Shamana and Shodhana* (curative) measures. The administration of pre-conceptional Shodhana therapies such as *Virechana* and *Basti* helps in detoxifying the liver and balancing *Doshas*, thus potentially preventing gestational liver disorders like ICP. During pregnancy, the use of Rasayana therapy—notably hepatoprotective herbs like *Guduchi, Punarnava, and Amalaki*—strengthens maternal immunity, maintains *Agni*, and supports fetal development. Additionally, *Garbhini Paricharya*, offers month-specific diet and lifestyle guidelines that could help minimize *Pitta* aggravation and protect liver function.

The correlation between Ayurvedic pathophysiology and modern hepatology reinforces the possibility of integrative approaches in managing ICP. Preventive strategies like *Garbhasamskara* and appropriate antenatal regimen may reduce recurrence, severity, and improve maternal-fetal outcomes.

CONCLUSION

Intrahepatic Cholestasis of Pregnancy is a high-risk condition of late pregnancy, demanding a vigilant and holistic management approach. While modern medicine provides evidence-based protocols for diagnosis and acute care, Ayurveda adds depth through its preventive and promotive vision rooted in understanding *Dosha* imbalance, *Agni* and *Srotas Dushti*.

By identifying ICP with *Garbhini Kamala*—a manifestation of *Pitta Dushti* and *Rakta Dushti*—Ayurveda offers relevant principles for both prevention and management. Interventions like Shodhana before conception, Rasayana during antenatal care, and *Garbhini Paricharya* aligned with monthly changes may serve as powerful tools to not only address the disease but also enhance overall maternal well-being and fetal health.

Therefore, an integrative care model combining modern obstetrics and classical Ayurvedic principles, may offer holistic and preventive solutions for managing ICP, with the potential to reduce its burden and improve pregnancy outcomes. Further clinical research and evidence-based validation of Ayurvedic protocols are essential to substantiate this approach and facilitate its application in mainstream obstetric care

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