

Review Article

Hyperbilirubinemia: A review with Ayurveda perspective

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ABSTRACT

High level of Bilirubin in blood is called as Hyperbilirubinemia. Hyperbilirubinemia is a cause of yellowish discoloration of skin and Mucosa. The Disease *Kamala* in Ayurveda literature is described with same clinical signs and symptoms like yellowish discoloration of Skin, Mucosa, Urine and fecal matter in Hepatocellular Jaundice. The etiopathogenesis of *Kamala* (Jaundice) as per Ayurveda is, If *Pandurogi* (Anemic person) takes *Pittaprapak Ahara Vihara* (the causative factors for excess production of Pitta) then it leads to '*Kamala*'. *Virechana* (Purgation Therapy) in Ayurveda, help to maintain the level of serum bilirubin to treat the cases of Jaundice. This Review article aims to discuss the hidden concepts regarding pathology and treatment in Ayurveda.

Keywords – *Kamala, Bahupitta Kamala, Hyperbilirubinemia, Yakrut, Pleeha*

INTRODUCTION

Jaundice is a disorder presenting yellowness (icterus) of Skin, Mucous Membrane due to hyperbilirubinemia. The annual incidence of jaundice in 1997 was 2.76/1000 population in India^[1] and in 2015 Prevalence of viral hepatitis is noted 11.5%^[2]. The incidence of Jaundice in critical patients of Intensive care unit is 40000 cases per 100000 cases^[3] the big number

reflects severity of disease. The Disease *Kamala* in Ayurveda literature is described with signs and symptoms like yellowish discoloration of Skin, Mucosa, Urine and fecal matter^[3]. These sign and symptoms are similar with Hepatocellular Jaundice.

Acharya Charaka mentions the *Kamala vyadhi* in Chapter of *Pandu roga* after description of *Pandu* (Anemia). According to Charak Samhita when *Pandu rogi* take *Pittaprapak Ahar and Vihara* (the causative factors for excess production of *Pitta*), Then it leads to *Kamala*. And if *Kamala* is neglected then it will turn into *Kumbha Kamala* which is difficult to treat condition.^[3] *Pitta* is believed to be a *Mala* (waste product) of *Rakta* (blood). *Yakrut*

Mala, & Srotasa. So this review is an attempt to discuss and explore the hidden concepts and lines between the words about *Kamala* in Ayurveda texts.

Disease Review from Ayurveda texts: Charak Samhita Acharya Charak mention *Hetu* (causes), *Bheda* (types), *Lakshanas* (symptoms) and *Chikitsa* (treatment) of *Kamala* Under the Chapter *Panduroga chikitsa*^[3]

Clinical Features	Koshthashrita	Shakhashrita	Halimaka	Kumbha kamala
Haridra Netra	Yes	Yes	Yes	No
Haridra Tvak	Yes	Yes	No	No
Haridra Nakha	Yes	No	No	No
Haridra Mukha	Yes	No	No	No
Haridra Mutra	No	Yes	No	No
Rakta Peeta Mutra and Pureesha	Yes	No	No	No
Tila -pishtanibha varchas	No	Yes	No	No
Krishna Peeta Pureesha & Mutra	No	No	Yes	Yes
Jvara	Yes	No	No	No
Aruchi	Yes	No	Yes	Yes
Daha	Yes	No	No	Yes
Daurbalya	Yes	Yes	Yes	No
Shotha	No	No	No	Yes
Angamarda	No	No	No	No
Bhrama	No	No	Yes	No
Kshaya	Yes	No	Yes	No
Pandu Netra	No	No	No	No
Sarakta Netra	No	No	No	Yes
Sarakta Pureesha	No	No	No	Yes
Sarakta Mutra	No	No	No	Yes
Shwasa	No	No	Yes	Yes

(Liver) and *Pleeha* (Spleen) are the seats (*Moolsthan*) for *Raktavaha Srotas*. Hence *Prakopit Pitta* (Vitiated *Pitta*) affects function of Liver and Spleen.

The treatment suggested by classical texts is to reduce abnormal *Pitta* by *Virechana* (Purgation therapy). The pathophysiology of *kamala* is based on the Involvement of *Dosha, Dhatu,*

Lakshanas and Different stages of Kamala:

Acharya Charaka explain step by step development of various types of *Kamala* in *Pandu Roga Adhyaya*^[3]. First step is *Pandu* (anemia) – 5 types – *Vataj, Pittaj, kaphaj, sannipatj, Mrudbhakshanjanya* Second step – Type 1- *Kamala* (Jaundice) – *Pandu rogi*, or even without *Pandu roga* (anemia) when one

indulges in *Ateeva Pittavardhaka Ahara* (food that causes Pitta vitiation), it leads in step 2 that is *Kamala. Pittaj pandu* with added Pitta produces *Koshtashrit (Bahupitta) Kamala*. Type 2- *Shakhashrit Kamala- Margavrodh* (obstruction) due to *vata&Kapha* causes *Shakhashrit* or *Rudhpath Kamala*. Type 3 – *Halimaka - Vataja pandu* with added Pitta produces *Halimaka*; Type 4 – *Kumbha Kamala - Kaphaja Pandu* with added Pitta produces *Kumbhakamala*.

Sushrut Samhita: In Uttartantra, Under *Pandu Rog Pratisedh adhyaya*, Sushrutacharya mention *Kamala* as next step of *Pandu*. he mentioned *Kumbhasavha, Laghrak, Halimakaas* complications of *Kamala*^[4] *Ashtanga Hridaya* – Increase *Rakta dhatu* is cause of *Kamala*^[5]

Kashyap Samhita: Yellowness of eyes, nails, face, feces, and urine, indigestion are the signs and symptoms of *Kamala* in Infants mentioned in *Sutrashan*, 25th chapter, *Vedanadhyaya*, of *Kashyap Samhita* ^[6] *Virechana* is told as the best treatment for *Kamala*. *Yogratnakar*- Causes, signs, symptoms, treatment is mentioned in detail in *Yogratnakar*.^[7] In infants, *Kamala* is due to *Pittaj Stanya Dushti. Guduchi, Patol, Nimba twak* etc all *Tikta rasatmak dravyas* treatment for mother and infant. *Hetu* (Causes) for *Bahupitta Kamala* (Hepatocellular Jaundice). *Ati Amla* (Citric) food & drinks, *Dadhi, Katuras atisevan* (spicy food)^{[3][4]}. The all above mentioned *ahara* and *vihara* cause abnormality in *Raktavaha srotas* and *raktavaha srotas Moolsthan* (Liver and Spleen). Then Liver produces excess abnormal pitta (Bilirubin) which is spread to all over body parts leads to yellow discoloration of Skin, sclera, nails, urine & stool. *Hetu* (causes) of *Shakhashrit Kamala* (Obstructive Jaundice) *Ruksha* (dry), *Sheet* (cold), *Guru* (Heavy), *Madhura* (sweet), *Ativyayam* (overexertion), *Vegavrodh* all these *hetus* causes *Kapha* and *Vata Vruddhi* it diverts *Pitta* from *Koshta* to *Shakha*.^[8]

Samprapti (Etiopathogenesis): *Bahupitta kamalaor Koshtashrit Kamala* –If, *Pandurogi* (anemic) or *Pitta Pradhan* person consume *Pitta Prakopak AharVihara* then, It leads to *Pittaprakopa* (Vitiation of Pitta), that *Prakopit pitta* cause *Mansa* and *Rakta* (blood) *Vidaha* (Burning).^[3] That vitiated *pitta* deposited in Liver and Spleen. It disturbed the function of *Yakrut* (liver) and *Pleeha* (spleen) that is, '*Ras Ranjan*' (Helps to maintain red color of blood). Liver and Spleen are *Moolsthan* of *Raktavaha srotas* so, from liver and spleen *Prakopit* (vitiated) *Pitta* spread to all other body parts by *Rakta* and shows signs and symptoms of *Bahupitta Kamala*. In Modern physiology it is like, due to excess destruction of RBCs, Conjugation of Unconjugated bilirubin gets hampered. Bilirubin level in blood increases and it causes icterus, that is yellowish discoloration of Skin and Mucous membrane. Due to increased bilirubin level, there is excess secretion of bile by liver into gastrointestinal tract, it leads to excess production of stercobilinogen by the bacterial action in large intestine and it is the cause of dark yellow colored Urine and Stool^[9]

Shakhashrit Kamala: Due to *Kapha- Vatkar Hetus* (Factors Vitiating *Kapha* and *Vata*), *Vata* combined with *Kapha* and produce obstruction in *Pitta marga* (Extra hepatic biliary apparatus). Which leads to excess accumulation of *Pitta* in liver but *Pitta* cannot reach to *Annavaaha srotasor Koshta* (Gastrointestinal tract), So, in this type of *Kamala* Stool is '*Til Pishta Nibham*' (like Sessom seed paste or clay colored). And other body parts – Skin and Mucous membrane are yellow colored. This is called *Rudhpath* or *Shakhashrit kamala*^[8]. The same mechanism is observed in obstructive jaundice, in which bile duct is obstructed due to bile stone, so excess bile accumulates in Liver and leads to increased serum bilirubin level, hence yellow discoloration of Skin and Mucous membrane. But due to obstruction bilirubin cannot enter in intestine so, Stool is clay colored^[10].

Samprapti ghataka (Factors responsible for Pathogenesis): *Dosha – Pitta, Dushya – Rakta, Mansa, Adhishtan – Yakrit, Pleeha, Koshta, Rakta, TwachaSrotas – Rasvaha, Raktavaha, Annavaaha, Purishvaha, Mutravaha, Srotodushiti – Atipravritti* (Excess production of Pitta), *Vimarga Gaman* (Pitta moves in unnatural direction), *Sanga* (obstruction due to *Kapha* and *Vata*) is mainly seen in *Rudhhapath Kamala* or *Shakhashrit kamala* (Obstructive jaundice)

Treatment: ‘*Kamali Tu Virechane*’, purgation therapy is the main treatment ^[11]. Purgatives can be given as per *Dosha, Dushya* and *Bala* of Patient.

Drugs: *Swarasa*(Juice) – *Bhunimbadi* , *Nimba Patra*, *Amruta*, *Churna* (Powder) – *Kutaki*, *Bhunimbadi*, *Kwatha- Phalatrikadi*, *Rasakalpa* – *Punarnava Mandur*, *Arogyavardhini*, *Ghrita* – *Mahatiktak ghrita*, *Kalyanak Grita*.

Mode of action of drugs: The above-mentioned drugs are *Tikta ras Pradhan* (Bitter). These drugs help to Hepatocytes for uptake of unconjugated bilirubin, stimulating MRP2 protein molecule for quick transport of conjugated bilirubin for its excretion by *Rechak* (purgation) property ^[12].

Prognosis: Negligence toward signs and symptoms of *Kamala* can leads to complications of *Kumbhakamala*. *Krushnapeet mutra* and *Shakrita* (Dark Yellow colored urine and stool), *Atishooha* (edema), *Raktaksheetta* (Red eyes), *Daha* (burning sensation), *Aruchi* (loss of taste), *Trishna* (Excess thirst), *Anaha* (Indigestion), *Tandra* (lass of orientation), *Nashtagnee* (loss of appetite), *Nashta sagya* (unconsciousness) are the alarming signs and symptoms ^[3].

CONCLUSION:

Bahupitta Kamala or *koshtashrit Kamala* in ayurveda can be understood as *Pitta dushti* in the form of *Atipravritti* (excess formation) and *Vimarga gamana*(Pitta moves in unnatural

direction). In Contemporary Medicine, it can be compared with Raised level of bilirubin in Hemolytic Jaundice and Hepatocellular jaundice. *Rudhhapath* or *Shakhashrit Kamala* can be understood as Obstruction due to *Kapha vata dushti* and can be compared with Obstructive jaundice. Physicians should understand the involvement of *Dosha, Dhātu, Mala, Srotasa* and *Sroto Moolasthanas* in *Kamala*, to treat the sign and symptoms in early stages to avoid complications of *Kumbha kamala*. *Verechana* (Purgation Therapy) help to maintain Bilirubin levels.

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