International Journal of Multidisciplinary Research and Growth Evaluation.

Management of Neonatal Jaundice with Bala Kwatha Parisheka and Phototherapy – A Case Study

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Article Info

ISSN (Online): 2582-7138
Impact Factor (RSIF): 8.04
Volume: 07
Issue: 02
March-April 2026
Received: 30-01-2026
Accepted: 26-02-2026
Published: 29-03-2026
Page No: 395-398

Abstract

Neonatal jaundice is one of the most common clinical conditions encountered in early neonatal life, affecting nearly 60% of term neonates. It results from elevated serum bilirubin levels due to increased hemolysis and immature hepatic conjugation mechanism. The present case study evaluates the effect of *Bala Kwatha Parisheka* (external therapeutic irrigation) along with phototherapy in a full-term neonate delivered via LSCS, presenting with physiological jaundice on day 2 of life. The case is analysed through both modern pediatric and Ayurvedic frameworks, with particular emphasis on correlating neonatal hyperbilirubinemia with Kamala arising from *Pittaja Stanya Dushti*. The integrative management demonstrated significant clinical improvement and reduction in bilirubin levels within 2 days, suggesting the potential of combining traditional Ayurvedic interventions with standard care.

Keywords: Neonatal Jaundice, Neonatal Hyperbilirubinemia, Navajata Kamala, Pittaja Stanya Dushti, Bala Kwatha Parisheka, Phototherapy, Ayurveda, Pitta Dosha, Rakta Dhatu, Integrative Neonatal Care

1. Introduction

Neonatal jaundice, clinically termed neonatal hyperbilirubinemia, is characterised by yellowish discolouration of the skin, sclera, and mucous membranes due to elevated bilirubin levels in the bloodstream. This condition is primarily attributed to increased breakdown of fetal erythrocytes and immature hepatic enzyme systems responsible for bilirubin conjugation.

In neonates, several physiological factors contribute to hyperbilirubinemia: [1]

- Increased red blood cell turnover (shorter lifespan ~90 days)
- Immature hepatic uptake and conjugation
- Increased enterohepatic circulation
- Reduced intestinal bacterial flora

If left untreated, elevated unconjugated bilirubin can cross the blood-brain barrier and lead to kernicterus, a serious neurological condition. [2]

From an Ayurvedic standpoint, neonatal jaundice can be understood within the spectrum of Kamala, particularly linked to *Pittaja*

Stanya Dushti, a condition arising from the consumption of vitiated breast milk by the neonate. The involvement of *Pitta Dosha*, *Rakta Dhatu*, and *Yakrit* (liver) underlies the pathogenesis. [3]

This case study explores an integrative therapeutic approach combining *Bala Kwatha Parisheka* with phototherapy in managing neonatal jaundice.

Case Presentation

A 2-day-old full-term male neonate, born at 38 weeks of gestation via Lower Segment Cesarean Section (LSCS), with a birth weight of 2.9 kg, was brought for evaluation. The APGAR scores were 8/10 at 1 minute and 9/10 at 5 minutes, indicating a stable immediate postnatal adaptation. The neonate was on exclusive breastfeeding since birth.

On the second day of life, the parents noticed yellowish discolouration of the skin and sclera. This was associated with mild lethargy, although the baby was feeding adequately, with only a slight reduction in activity.

The antenatal history was uneventful, with no record of maternal illness during pregnancy. There was no evidence of Rh or ABO incompatibility, and the mother had no history of infections or significant drug intake during the antenatal period. The family history was non-contributory, with no known cases of hemolytic disorders.

On clinical examination, the neonate was active but mildly lethargic. There was noticeable yellow discolouration involving the face and upper chest, corresponding to Kramer zone II. There was no evidence of pallor or cyanosis, and the body temperature was within normal limits. Systemic examination revealed normal neonatal reflexes on central nervous system evaluation. Cardiovascular examination showed normal heart sounds without any added murmurs. Respiratory system examination was unremarkable, with normal breathing patterns and no signs of distress. Abdominal examination revealed a soft abdomen with no hepatosplenomegaly.

Table 1: Investigations

Parameter	Value	Interpretation
Total Serum Bilirubin	12.5 mg/dL	Elevated
Direct Bilirubin	0.5 mg/dL	Normal
Indirect Bilirubin	12.0 mg/dL	Elevated
Hemoglobin	16 g/dL	Normal
Blood Group	Compatible	No incompatibility

Diagnosis: Physiological neonatal hyperbilirubinemia

Ayurvedic Assessment and Treatment Protocol

Based on Ayurvedic evaluation, the condition was diagnosed as *Navajata Kamala*, which developed due to *Pittaja Stanya Dushti*. The underlying *Samprapti Ghataka* revealed the involvement of *Pitta Pradhana Tridosha* as the predominant *Dosha*, with *Rakta* and *Mamsa* as the principal *Dushya*. The affected *Srotas* included *Rasavaha* and *Raktavaha*, while the primary sites *(Adhisthana) of* pathology were *Yakrit* and *Twak*. The type of *Srotodushti* observed in this case was mainly *Atipravritti* and *Vimargagamana*.

The *Samprapti* (pathogenesis) can be explained as follows: due to the intake of *Pittaja Dushta Stanya*, *Pitta Dosha* is aggravated, which subsequently vitiates the *Rakta Dhatu*. The impaired functioning of *Ranjaka Pitta* at the *Yakrit* level hampers the normal transformation and metabolism of bilirubin. This results in its accumulation in the body, clinically manifesting as yellow discolouration of the skin and sclera.

Regarding management, an integrative treatment protocol was adopted. As part of modern management, phototherapy was administered for 48 hours to facilitate the conversion and excretion of bilirubin. Alongside this, an Ayurvedic intervention, *Bala Kwatha Parisheka*, was performed as an external therapeutic measure. The neonate's clinical condition before treatment initiation is depicted in Figure 1 (a).

Table 2: Treatment Protocol

Category	Details
Modern Management	Phototherapy for 48 hours
Ayurvedic Intervention	*Bala Kwatha Parisheka*
Preparation	Decoction prepared using *Bala (Sida cordifolia)*
Method	Lukewarm decoction used for gentle irrigation over the neonate’s body
Duration	10–15 minutes per session
Frequency	Twice daily

Table 3: Clinical Outcome

Day	Serum Bilirubin	Clinical Findings
Day 1	12.5 mg/dL	Yellow discoloration present
Day 2	10.2 mg/dL	Reduced icterus
Day 3	8.1 mg/dL	Minimal discoloration

Observations

Following the integrative treatment approach, a significant reduction in serum bilirubin levels was observed within 48 hours. Clinically, the neonate showed marked improvement in activity levels and feeding behaviour, indicating overall recovery and well-being. The yellowish discolouration of the skin and sclera also reduced noticeably. Importantly, no adverse effects or complications were observed during treatment. The post-treatment clinical condition of the neonate is depicted in Figure 1(b).

Fig 1: Pre and post-treatment of the neonate

Discussion

Neonatal hyperbilirubinemia is a frequently encountered condition in early neonatal life, characterised by elevated blood bilirubin levels that lead to yellow discolouration of the skin and sclera. This occurs primarily due to increased breakdown of fetal erythrocytes and the functional immaturity of the neonatal liver, which is not fully efficient in conjugating and excreting bilirubin. Additional contributing factors include enhanced enterohepatic circulation, reduced hepatic clearance, and limited intestinal flora. Although physiological jaundice is usually self-limiting, careful monitoring is essential to prevent complications such as bilirubin-induced neurological dysfunction and kernicterus.

In the present case, the condition was identified as physiological neonatal jaundice. From an Ayurvedic perspective, this condition can be correlated with *Kamala*, particularly arising due to *Pittaja Stanya Dushti*. [4] Since the neonate is entirely dependent on breast milk for nutrition, any variation in the quality of maternal milk directly influences the infant. Improper dietary habits and metabolic disturbances in the mother may lead to vitiation of *Stanya*, predominantly affecting *Pitta Dosha*, which in turn vitiates *Rakta Dhatu* and manifests as discolouration of the skin and sclera in the neonate. [5]

The correlation between modern and Ayurvedic concepts provides a deeper understanding of the disease process. Hyperbilirubinemia can be interpreted as *Pitta Vriddhi*, while hepatic immaturity corresponds to *Yakrit Dushti*. Increased hemolysis aligns with *Rakta Dushti*, and the clinical manifestation of jaundice is comparable to *Kamala*. The pathogenesis involves vitiated *Pitta* affecting *Rakta* and localising in Twak, resulting in characteristic yellowish discolouration. The involvement of *Ranjaka Pitta* at the level of *Yakrit* can be correlated with impaired bilirubin metabolism and conjugation. [6]

Classical Ayurvedic literature, particularly *Kashyapa Samhita*, describes clinical features of *Kamala* in infants, emphasising diagnosis based on observable signs, as neonates cannot express symptoms. Historical references from Vedic texts also highlight the use of sunlight (*Suryakirana Chikitsa*) in managing yellow discolouration, which shows conceptual similarity to modern phototherapy. Phototherapy works by converting unconjugated bilirubin into water-soluble forms that can be easily excreted, while sunlight therapy, as described in Ayurveda, may act through a similar mechanism. [7]

The application of *Bala Kwatha Parisheka* in this case aligns with the principles of *Pitta Shamana* and *Twak Shodhana*. [8] External therapies are particularly advantageous in neonates, given the limitations and safety concerns associated with intravenous medications. *Bala* possesses *Pitta-shamaka*, *Rasayana*, and *Balya* properties, which may help improve skin metabolism, enhance peripheral circulation, and reduce bilirubin levels. Additionally, Ayurvedic drugs are believed to support hepatic function by improving the uptake and transport of bilirubin, possibly through mechanisms analogous to those that enhance hepatocellular activity and excretory pathways. [9]

From a pharmacological perspective, the action of Ayurvedic interventions may be understood as improving bilirubin metabolism and excretion. The stimulation of hepatocellular transport systems, such as those analogous to the MRP2 transporter, may enhance the conjugation and elimination of bilirubin. Furthermore, the antioxidant and hepatoprotective properties of such interventions may reduce oxidative stress

and support liver function, thereby contributing to lower serum bilirubin levels.

The integrative approach adopted in this case demonstrated multiple benefits. The combination of phototherapy and *Bala Kwatha Parisheka* resulted in accelerated reduction of bilirubin levels, improved neonatal activity and feeding, and overall better clinical recovery. It also reduced the duration of phototherapy exposure and provided a safe, non-invasive adjunct therapy without any observed adverse effects.

Thus, this case highlights the relevance of integrating Ayurvedic principles with modern neonatal care. Understanding neonatal jaundice through the framework of *Dosha*, *Dhatu*, *Mala*, and *Srotas* not only enriches the conceptual understanding but also opens avenues for safe and effective complementary therapies in neonatal practice.

Conclusion

Neonatal jaundice is a common yet clinically significant condition that requires timely identification and appropriate management to prevent potential complications. The present case highlights that physiological neonatal hyperbilirubinemia can be effectively managed through an integrative approach combining modern phototherapy with Ayurvedic intervention. From an Ayurvedic perspective, the condition can be understood as *Navajata Kamala* resulting from *Pittaja Stanya Dushti*, involving the vitiation of *Pitta Dosha* and *Rakta Dhatu* with primary involvement of *Yakrit* and *Twak*.

The use of *Bala Kwatha Parisheka* as an external therapy proved safe and beneficial, contributing to reduced bilirubin levels, improved clinical symptoms, and overall well-being of the neonate. When used alongside phototherapy, it may enhance therapeutic outcomes and reduce the duration of conventional treatment.

This case supports the potential role of Ayurvedic therapies as effective adjuncts in neonatal care. However, further well-designed clinical studies with larger sample sizes are needed to validate these findings and establish standardised protocols for the integrative management of neonatal jaundice.

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How to Cite This Article

Bhatero D, Sreevisakh TS, Balene P. Management of Neonatal Jaundice with Bala Kwatha Parisheka and Phototherapy – A Case Study. Int J Multidiscip Res Growth Eval. 2026;7(2):395–398.