Indian Journal of Advanced Nursing Care and Health Studies
Volume 1, Issue 2 - 2025, Pg. No. 1-4
Peer Reviewed & Open Access Journal

Review Article

# Bronze Baby Syndrome

A Jaya Bharathi[1], V Archana[2]

[1]Lecturer, Arcot Sri Mahalakshmi Womens College of Nursing, Ranipet, India
[2]Associate Professor, Arcot Sri Mahalakshmi Womens College of Nursing, Ranipet, India

## I N F O

**Corresponding Author:**
A Jaya Bharathi, Arcot Sri Mahalakshmi Womens College of Nursing, Ranipet, India
**E-mail Id:**
jayabharathij09@gmail.com
**Orcid Id:**
https://orcid.org/ 0009-0001-4836-7923

**How to cite this article:**
Bharathi A J, V Archana. Bronze Baby Syndrome. Ind J Adv Nurs Care Health Stud. 2025;1(2):1-4.

Date of Submission: 2025-07-25
Date of Acceptance: 2025-09-19

## A B S T R A C T

Bronze Baby Syndrome is a rare, benign, and reversible condition observed in neonates undergoing phototherapy for hyperbilirubinemia. It is characterized by a distinct greyish -brown or bronze discolouration of the skin, mucous membranes, and urine. The syndrome is commonly associated with conjugated hyperbilirubinemia and impaired hepatic excretion of bile pigments. Although the unusual pigmentation may cause parental concern, the condition is not harmful and usually resolves after discontinuation of phototherapy or once jaundice subsides. Nursing management focuses on continuous monitoring of bilirubin levels, assessment of skin changes, evaluation of liver function, and providing reassurance and education to caregivers. Early recognition of the condition is crucial to differentiate it from other serious neonatal disorders and to ensure safe continuation of treatment.

**Keywords:** Bronze Baby Syndrome, Neonatal Jaundice, Phototherapy, Hyperbilirubinemia, Conjugated Bilirubin, Nursing Management

## Introduction

### The Curious Case of the Bronze Baby!

In the world of newborn care, there's a fascinating phenomenon that occasionally surprises even seasoned nurses and doctors. Picture this: a tiny baby placed under glowing blue phototherapy lights to treat jaundice... but instead of returning to a healthy pink, the baby's skin turns a strange bronze or greyish -brown color! At first glance, it might seem like the baby has just returned from a tropical holiday — but this isn't a sun tan. This unusual change is what we call Bronze Baby Syndrome.

Though rare, it adds a splash of mystery and curiosity to the routine management of neonatal jaundice. And while the name may sound alarming, don't worry — the condition is usually harmless and reversible. Understanding why it happens is like uncovering a hidden twist in the story of bilirubin metabolism and phototherapy (Figure1). So, let's dive into this golden-brown mystery and discover what really makes some babies glow in bronze![1]

**Figure 1.Baby under phototherapy**

### Definition

Bronze Baby Syndrome is a rare condition seen in newborns undergoing phototherapy for jaundice, where the baby's skin, mucous membranes, and sometimes even the urine turn a greyish-brown or bronze colour. (Figure 2)

This discolouration usually appears in babies with cholestatic (conjugated) jaundice and is caused by the accumulation of certain pigments that react to the phototherapy light.[2]

**Figure 2.Bronze Baby**

## Risk Factor

**Babies who:**

- Have cholestatic jaundice
- Have congenital liver issues
- Are undergoing phototherapy for a long time
- Or are premature and have immature liver function

**Causes:**

- Accumulation of bilirubin photoproducts in the skin.
- Cholestasis or liver dysfunction → reduced excretion of bile pigments.
- Deposition of copper–porphyrin complexes or other pigmented substances.
- Babies with conjugated hyperbilirubinemia receiving phototherapy.


**Figure 3.Clinical features of bronze baby syndrome**

## Pathophysiology

Hyperbilirubinemia

↓

Phototherapy initiated

↓

Breakdown of bilirubin into photo isomers & byproducts

↓

Accumulation of photodegradation products (like biliverdin-like pigments)

↓

Impaired liver function or immature hepatic metabolism

↓

Poor excretion of these pigments (especially in cholestasis)

↓

Deposition of pigmented substances in skin and other tissues

↓

Baby turns into **bronze or grayish-brown discoloration** of the skin

## Clinical Features

- **Bronzed or greyish-brown skin:** The most notable sign is the discolouration of the baby's skin, particularly in areas that have been exposed to the phototherapy lights. (Figure 3)
- **No significant distress:** Unlike jaundice, which can lead to more severe health issues, babies with Bronze Baby Syndrome usually do not show signs of distress or illness.[3]

## Diagnosis

- **Physical appearance:** The skin colour change is usually the most obvious indicator, and doctors can typically diagnose the condition based on the appearance of the baby.
- **Blood test-Serum bilirubin:** check for direct and indirect levels.
- **Liver function tests (LFTs):** to rule out underlying liver disease.

## Treatment

Management of Bronze Baby Syndrome begins with the immediate discontinuation of phototherapy, the usual cause of skin discolouration . Regular monitoring of bilirubin levels and liver function tests is essential to rule out underlying liver disease. Clinicians should observe for signs such as clay-coloured stools, dark urine, or hepatomegaly.

Supportive nursing care includes maintaining skin integrity, repositioning the infant, ensuring proper eye protection, and monitoring temperature to prevent overheating or hypothermia. Adequate hydration and nutrition through frequent feeding should be encouraged, with intake, output, and weight closely monitored. Supplemental fluids may be provided if prescribed, especially in preterm or low-birth-weight infants. (Figure 4)

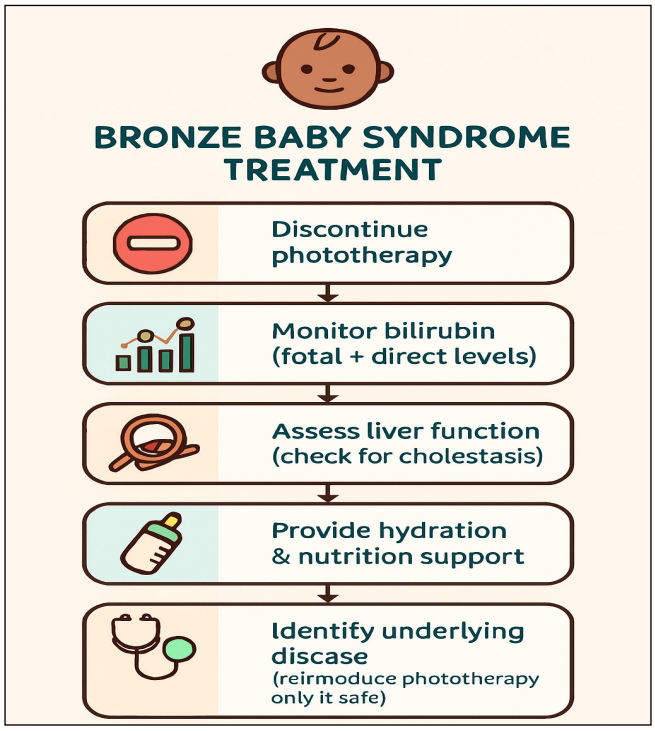


**Figure 4.Treatment of Bronze baby syndrome**

## Discontinue Phototherapy

- Main cause of skin discolouration
- Stop immediately if Bronze Baby Syndrome is suspected

## Monitor and Evaluate

- Assess bilirubin levels regularly – both direct (conjugated) and indirect (unconjugated).
- Perform liver function tests (LFTs) to evaluate for underlying cholestasis or hepatocellular dysfunction.

## Observe for:

- Clay-colored stools
- Dark urine
- Hepatomegaly (enlarged liver)
- Other signs of liver disease

## Supportive Nursing Care

### Skin Care

- Monitor for skin integrity while under phototherapy.
- Reposition every 2 hours, keep skin clean and dry.

## Eye Protection

- Eyes with appropriate pads to prevent retinal damage.
- Remove eye pads periodically to check eyes.

## Temperature Regulation

- Monitor body temperature frequently; phototherapy can cause overheating or hypothermia.

### Hydration and Nutrition

- Encourage frequent feeding (breast milk or formula) to prevent dehydration and promote bilirubin excretion.
- Monitor intake and output (urine, stools) and daily weight.
- Provide supplemental fluids if prescribed, especially in preterm or low birth weight infants.[4]

### Nursing Diagnosis

- Risk for impaired skin integrity related to continuous exposure to phototherapy lights and skin pigmentation changes.
- Risk for altered liver function related to underlying cholestasis or hepatocellular dysfunction as evidenced by conjugated hyperbilirubinemia.
- Anxiety (parental) related to the unfamiliar appearance of the baby (bronze discoloration) and concern for the baby's health.
- Risk for fluid volume deficit related to increased insensible water loss from phototherapy.

## Nursing Interventions

### Monitor and maintain skin integrity

#### Intervention

- Assess skin colour, temperature, and integrity every shift.
- Change infant's position every 2 hours to prevent localized irritation.
- Keep skin clean and dry; check for rashes or breakdown.

### Support liver function and monitor bilirubin

#### Intervention

- Monitor serum bilirubin levels (direct and indirect) as ordered.
- Observe for signs of cholestasis (pale stools, dark urine, hepatomegaly).
- Collaborate with a physician for further investigations if needed.

### Maintain phototherapy effectiveness and safety

#### Intervention

- Continue phototherapy as prescribed.
- Ensure proper distance of phototherapy unit from baby (usually 30–50 cm depending on unit).

- Cover infant's eyes with appropriate eye pads and check placement regularly.
- Expose as much skin as possible (diaper only) while maintaining temperature.

### Prevent dehydration

**Intervention**

- Monitor intake and output (record urine output, stool, and weight).
- Encourage frequent breastfeeding or formula feeds.
- Assess for signs of dehydration (dry mucous membranes, poor skin turgor).

### Provide parental education and emotional support

**Intervention**

- Explain the benign nature of bronze discoloration to reduce anxiety.
- Inform parents that the colour change is temporary and will resolve after therapy is stopped.
- Involve parents in care (feeding, comforting) to reduce fear.[5]

## Prognosis

Bronze Baby Syndrome is generally temporary and does not usually cause long-term harm to the baby. Once phototherapy is discontinued, the discoloration typically fades, and the baby recovers without any lasting effects.

## Conclusion

**The Bronze Tint, A Temporary Tale**

Bronze Baby Syndrome may look unusual — even alarming at first — but it's a harmless and reversible condition that simply reflects how the body responds to jaundice treatment under special circumstances. It reminds us that every baby's response to treatment is unique, especially when liver function is immature or impaired.

As healthcare providers, our role is to understand what is behind the skin tone, reassure the parents, monitor the baby closely, and continue phototherapy as guided. With time and proper care, the bronze hue fades away, leaving behind a healthy baby and a valuable clinical lesson in neonatal care.6

**Author's Contributions:** Conceived the idea of the review, outlined the structure, and supervised the overall preparation of the manuscript.

**Conflict of Interest:** None

**Sources of Funding:** None

## References

1. Ghai, O. P., Paul, V. K., & Bagga, A. (2021). Ghai essential pediatrics (10th ed.). CBS Publishers & Distributors.
2. Datta K. A Guide to Mechanical Ventilation in Emergency Room. Jaypee Brothers Medical Publishers; 2021 Oct 31. [Google Scholar]
3. Onishi S, Itoh S, Isobe K, Togari H, Kitoh H, Nishimura Y. Mechanism of development of bronze baby syndrome in neonates treated with phototherapy. Pediatrics. 1982 Mar 1;69(3):273-6.[Google Scholar][PubMed]
4. Rodot, S., Lacour, J. P., Dageville, C., Castanet, J., Boutté, P., &Ortonne, J. P. (1994). ["Bronze baby" syndrome]. Annales de Dermatologie et de Vénéréologie, 121(8), 568–570. https://pubmed.ncbi.nlm.nih.gov/7755316/
5. Le TV, Reese J. Bronze baby syndrome. The Journal of Pediatrics. 2017 Sep 1;188:301-.[Google Scholar]
6. Sousa P, Sousa B, Pinto A, Freitas A. Bronze baby syndrome or early onset sepsis?. Anales de Pediatría (English Edition). 2023 Oct 1;99(4):281-2.[Google Scholar][PubMed]