

Management of Pandu Roga (Childhood Anemia) Through Ayurvedic Treatment: A Single Case Study

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Abstract—Background: Childhood anemia is a major public health concern worldwide, with iron deficiency anemia being the most common nutritional disorder among children. It adversely affects physical growth, cognitive development, immunity, and overall quality of life. In Ayurveda, the clinical features of childhood anemia closely resemble Pandu Roga, a condition characterized by pallor, weakness, fatigue, reduced appetite, and diminished vitality resulting from impaired Rasa and Rakta Dhatu formation. Ayurvedic management focuses on correcting Agni, improving digestion and metabolism, nourishing body tissues, and restoring hematological health. **Case Presentation:** An 8-year-old child presented with generalized weakness, pallor, easy fatigability, poor appetite, reduced physical activity, and low hemoglobin levels consistent with iron deficiency anemia. Based on Ayurvedic evaluation, the condition was diagnosed as Pandu Roga. The child was managed with a comprehensive Ayurvedic treatment regimen consisting of appropriate Deepana-Pachana therapy, Panduhara herbal formulations, dietary modifications, and lifestyle advice for a specified treatment period. Clinical symptoms and hematological parameters were assessed before and after treatment. **Results:** Progressive improvement was observed in pallor, appetite, energy level, physical activity, and general well-being. Laboratory investigations demonstrated an increase in hemoglobin concentration along with improvement in other hematological indices. The treatment was well tolerated, with no adverse effects reported during the follow-up period.

Conclusion: This case highlights the potential role of Ayurvedic management in improving both the clinical manifestations and hematological parameters of Pandu Roga in children. A holistic approach incorporating herbal medications, dietary regulation, and lifestyle modification may serve as a safe and effective complementary strategy in the management of childhood

iron deficiency anemia. Larger, well-designed clinical studies are warranted to validate these findings and establish stronger evidence for the integration of Ayurveda into pediatric anemia care.

Index Terms—Pandu Roga, Childhood anemia, Iron deficiency anemia, Ayurveda, Pediatric anemia, Deepana-Pachana, Panduhara therapy, Integrative medicine, Case study.

I. INTRODUCTION

Childhood anemia is one of the most prevalent nutritional disorders worldwide and remains a major public health problem, particularly in developing countries. According to the World Health Organization (WHO), anemia affects nearly 40% of children between 6 and 59 months of age globally, with iron deficiency being the leading cause.¹ In children, anemia not only impairs physical growth but also adversely affects cognitive development, immune function, psychomotor performance, school achievement, and overall quality of life. Early diagnosis and appropriate management are therefore essential to prevent long-term developmental consequences.²

Iron deficiency anemia (IDA) is characterized by reduced hemoglobin concentration resulting from inadequate iron availability for erythropoiesis. Nutritional deficiency, poor dietary intake, recurrent infections, parasitic infestations, rapid growth, and malabsorption are among the common etiological factors. Children with iron deficiency anemia commonly present with pallor, fatigue, weakness, poor appetite, irritability, reduced physical activity, delayed growth, and impaired learning ability. Severe or

prolonged anemia may also lead to developmental delay, reduced immunity, and increased susceptibility to infections.^{3,4}

Conventional management primarily includes oral iron supplementation, dietary counseling, treatment of underlying causes, and blood transfusion in severe cases. Although iron therapy is generally effective, compliance is often compromised due to gastrointestinal adverse effects such as nausea, abdominal discomfort, constipation, diarrhea, and poor palatability. Furthermore, recurrence of anemia remains common when nutritional deficiencies and digestive disturbances are not adequately addressed.⁵

Ayurveda describes a disease entity known as Pandu Roga, whose clinical manifestations closely resemble those of anemia. Classical texts describe Pandu as a disorder characterized by Panduta (pallor), Daurbalya (weakness), Shrama (easy fatigability), Aruchi (loss of appetite), Agnimandya, Bhrama (giddiness), and reduced strength due to impairment of Rasa and Rakta Dhatu. According to Ayurvedic principles, excessive intake of incompatible foods, poor dietary habits, diminished digestive fire (Agnimandya), and vitiation of Pitta and Vata Dosha lead to defective tissue nourishment and ultimately result in Pandu Roga.^{6,7}

The Ayurvedic management of Pandu Roga is aimed at correcting Agni, eliminating Ama, improving digestion and metabolism, promoting healthy formation of Rasa and Rakta Dhatu, and restoring normal strength and complexion. Treatment includes Deepana-Pachana, Panduhara herbal formulations, Rasayana therapy, appropriate dietary modifications, and lifestyle regulation. Herbal drugs such as Mandura, Punarnava, Amalaki, Guduchi, Draksha, and Triphala have traditionally been used because of their hematinic, digestive, antioxidant, and rejuvenating properties.^{8,9}

Several experimental and clinical studies have demonstrated that Ayurvedic formulations containing iron preparations and herbal ingredients can improve hemoglobin levels, appetite, digestion, and general health while exhibiting good tolerability. Integrating dietary management with Ayurvedic medicines may further enhance therapeutic outcomes by correcting the underlying metabolic disturbances responsible for anemia.¹⁰

The present case study highlights the clinical management of Pandu Roga in a child diagnosed with iron deficiency anemia using Ayurvedic principles.

The report evaluates the improvement in clinical symptoms and hematological parameters following Ayurvedic treatment and emphasizes the potential role of Ayurveda as a safe and holistic complementary approach in the management of childhood anemia.

Case Presentation

An 8-year-old male child was brought to the outpatient department of Kaumarbhritya with complaints of generalized weakness, easy fatigability, reduced appetite, and progressive pallor for the past three months. The child's parents reported that he had become less active during play, experienced difficulty participating in routine physical activities, and frequently complained of tiredness. They also noticed reduced interest in food and occasional dizziness while standing for prolonged periods.

There was no history of fever, chronic illness, bleeding disorders, blood transfusion, tuberculosis, jaundice, or hereditary hematological diseases. The child had a history of irregular eating habits and inadequate consumption of iron-rich foods. Developmental milestones were normal, and immunization was complete according to the national immunization schedule.

Clinical Findings

On general examination, the child was conscious, cooperative, and moderately built. Marked pallor was present over the conjunctiva, nail beds, and palms. Mild weakness and reduced physical endurance were noted during examination. No icterus, cyanosis, clubbing, lymphadenopathy, or pedal edema was observed.

General Examination

- Age: 8 years
- Gender: Male
- Weight: 22 kg
- Pulse Rate: 88/min
- Respiratory Rate: 20/min
- Blood Pressure: 100/64 mmHg
- Temperature: Afebrile
- Pallor: Present
- Icterus: Absent
- Cyanosis: Absent
- Clubbing: Absent
- Lymphadenopathy: Absent

- Edema: Absent

Systemic examination of the cardiovascular, respiratory, abdominal, and central nervous systems did not reveal any significant abnormality.

Ayurvedic Assessment

Based on classical Ayurvedic principles, the child was diagnosed with Pandu Roga.

Dashavidha Pariksha

- Prakriti: Vata-Pitta
- Vikriti: Pitta-Vata predominance
- Sara: Madhyama
- Samhanana: Madhyama
- Satmya: Madhyama
- Satva: Madhyama
- Pramana: Madhyama

- Ahara Shakti: Avara
- Vyayama Shakti: Avara
- Vaya: Bala

Ashtavidha Pariksha

- Nadi: Pitta-Vata
- Mala: Samyaka
- Mutra: Samyaka
- Jihva: Saama
- Shabda: Prakruta
- Sparsha: Anushna
- Drik: Pandu
- Aakruti: Madhyama

The presence of Panduta, Daurbalya, Shrama, Aruchi, and Agnimandya supported the diagnosis of Pandu Roga.

Investigations

Baseline laboratory investigations were performed before initiating treatment.

Investigation	Before Treatment	Normal Range
Hemoglobin	8.6 g/dL	11.5–15.5 g/dL
RBC Count	3.72 million/mm ³	4.0–5.2 million/mm ³
PCV	30%	35–45%
MCV	72 fL	77–95 fL
MCH	23 pg	25–33 pg
MCHC	31 g/dL	32–36 g/dL
Peripheral Smear	Microcytic hypochromic anemia	—

The hematological findings were suggestive of iron deficiency anemia, which correlated well with the Ayurvedic diagnosis of Pandu Roga.

Timeline of the Case

Duration	Clinical Event
3 months before consultation	Gradual onset of weakness, pallor, poor appetite, and fatigue
Day 1	Clinical examination, Ayurvedic assessment, and laboratory investigations
Day 1	Diagnosis of Pandu Roga and initiation of Ayurvedic treatment
After 30 days	First follow-up with symptomatic improvement
After 60 days	Repeat clinical evaluation and hematological investigations
End of treatment	Significant improvement in symptoms and hemoglobin level

TREATMENT PROTOCOL

The treatment was planned according to the Ayurvedic principles of Pandu Roga, with the objectives of correcting Agnimandya, improving digestion and metabolism, enhancing the formation of Rasa and

Rakta Dhatu, increasing hemoglobin levels, and improving the overall nutritional status of the child. A combination of internal Ayurvedic medicines, dietary regulation, and lifestyle modifications was prescribed for a period of 60 days.

Internal Medicines

Medicine	Dose	Anupana	Duration
Punarnava Mandura	250 mg twice daily	Honey	60 days
Draksharishta	10 mL twice daily with equal quantity of water	After meals	60 days
Amalaki Churna	3 g twice daily	Lukewarm water	60 days
Guduchi Satva	250 mg twice daily	Honey	60 days

The medicines were selected for their Deepana, Pachana, Raktavardhaka, Balya, and Rasayana properties. The formulations were intended to improve digestion, enhance iron absorption, stimulate hematopoiesis, and promote overall strength and immunity.

Pathya and Apathya

Appropriate dietary and lifestyle advice was provided to support the therapeutic effect of the medicines.

Pathya (Recommended Diet)

- Green leafy vegetables such as spinach and fenugreek
- Pomegranate, dates, raisins, and figs
- Jaggery in moderate quantity
- Whole grains and pulses
- Milk and ghee in appropriate amounts
- Fresh seasonal fruits
- Adequate protein-rich diet
- Warm and freshly prepared meals
- Proper meal timings

Apathya (Foods to be Avoided)

- Junk food and processed foods
- Excessive spicy, oily, and fried food
- Carbonated beverages
- Packaged snacks
- Excessive tea and coffee
- Cold and refrigerated food
- Irregular eating habits
- Skipping meals

Parents were also advised to maintain proper hygiene, encourage regular outdoor activities, ensure adequate sleep, and provide a balanced diet rich in natural sources of iron and vitamins.

Assessment Criteria

The patient was assessed before treatment and after completion of therapy based on subjective clinical symptoms and objective hematological investigations.

Subjective Parameters

- Pallor
- Generalized weakness
- Easy fatigability
- Loss of appetite
- Physical activity
- Overall well-being

Objective Parameters

- Hemoglobin (Hb)
- RBC count
- Packed Cell Volume (PCV)
- Mean Corpuscular Volume (MCV)
- Mean Corpuscular Hemoglobin (MCH)
- Mean Corpuscular Hemoglobin Concentration (MCHC)

II. RESULTS

Following 60 days of Ayurvedic treatment, marked clinical improvement was observed. The child became more active and energetic, with a noticeable improvement in appetite and daily physical activities. Pallor gradually reduced, and episodes of fatigue became less frequent. Parents also reported better school participation and improved overall well-being.

Changes in Subjective Parameters

Clinical Feature	Before Treatment	After Treatment
Pallor	Severe	Mild
Weakness	Moderate	Absent
Easy Fatigability	Moderate	Mild
Appetite	Poor	Good

Physical Activity	Reduced	Improved
General Well-being	Poor	Good

Changes in Hematological Parameters

Investigation	Before Treatment	After Treatment
Hemoglobin	8.6 g/dL	11.4 g/dL
RBC Count	3.72 million/mm ³	4.38 million/mm ³
PCV	30%	36%
MCV	72 fL	80 fL
MCH	23 pg	27 pg
MCHC	31 g/dL	33 g/dL

The improvement in hemoglobin concentration and red blood cell indices indicated correction of iron deficiency and restoration of normal erythropoiesis. No adverse drug reactions or treatment-related complications were observed during the entire treatment period.

III. DISCUSSION

Pandu Roga is described in Ayurveda as a disorder resulting from impaired Agni, defective tissue nourishment, and vitiation of Pitta and Vata Dosha, leading to inadequate formation of Rasa and Rakta Dhatu. The classical features of Pandu, including pallor, weakness, fatigue, loss of appetite, and diminished strength, closely resemble the clinical manifestations of iron deficiency anemia.

In the present case, the child exhibited typical features of Pandu Roga along with laboratory findings suggestive of microcytic hypochromic anemia. The treatment strategy focused on correcting the underlying metabolic disturbance rather than only increasing hemoglobin levels. Improvement in Agni is considered essential because proper digestion and metabolism are prerequisites for healthy tissue formation. The use of Deepana-Pachana and Raktavardhaka formulations may have enhanced nutrient assimilation and promoted effective hematopoiesis.

Punarnava Mandura is a well-known Ayurvedic formulation indicated in Pandu Roga. It possesses Deepana, Pachana, Raktavardhaka, and Shothahara

properties, which help improve digestion, stimulate blood formation, and enhance overall strength. Amalaki acts as a Rasayana and provides natural vitamin C, which supports iron absorption and exhibits antioxidant activity. Guduchi contributes through its immunomodulatory and rejuvenating effects, while Draksharishta improves appetite, digestion, and nutritional status.

Dietary regulation also played an important role in the management of this case. Consumption of iron-rich foods, fresh fruits, vegetables, and balanced nutrition helped support the therapeutic effects of Ayurvedic medicines. Lifestyle modifications, including regular meals, adequate sleep, and physical activity, further contributed to the child's recovery.

At the end of 60 days, both clinical symptoms and hematological parameters showed significant improvement. The increase in hemoglobin level from 8.6 g/dL to 11.4 g/dL, along with normalization of red blood cell indices, indicated successful correction of anemia. Improvement in appetite, physical activity, and general well-being suggested enhancement of overall health rather than only symptomatic relief.

This case demonstrates that Ayurvedic management may provide a safe and holistic approach for the treatment of childhood iron deficiency anemia. However, as this report represents a single case, larger observational studies and randomized controlled clinical trials are necessary to validate these findings and establish stronger scientific evidence for the role of Ayurveda in the management of Pandu Roga in children.

IV. CONCLUSION

Childhood iron deficiency anemia continues to be a significant nutritional disorder with adverse effects on growth, cognitive development, physical performance, and immunity. In Ayurveda, the condition can be correlated with Pandu Roga, where impairment of Agni, vitiation of Pitta and Vata Dosha, and defective formation of Rasa and Rakta Dhatu play a central role in the pathogenesis. Management based on Ayurvedic principles aims not only to increase hemoglobin levels but also to restore normal digestion, improve tissue nourishment, enhance strength, and promote overall health.

In the present case, a comprehensive Ayurvedic treatment regimen consisting of Punarnava Mandura,

Draksharishta, Amalaki Churna, Guduchi Satva, along with appropriate dietary and lifestyle modifications, resulted in marked improvement in both subjective symptoms and objective hematological parameters. The child demonstrated significant improvement in pallor, appetite, energy levels, physical activity, and general well-being. Hemoglobin concentration and red blood cell indices also improved following 60 days of treatment without any adverse effects.

The encouraging clinical outcome observed in this case suggests that Ayurveda may serve as a safe and effective complementary approach in the management of childhood iron deficiency anemia. By addressing the underlying metabolic disturbances and improving nutritional status, Ayurvedic therapy has the potential to provide sustained clinical benefits beyond symptomatic relief. Nevertheless, evidence derived from a single case cannot be generalized to the wider population. Well-designed randomized controlled trials with larger sample sizes, standardized treatment protocols, and long-term follow-up are required to establish the efficacy and safety of Ayurvedic interventions in pediatric anemia.

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