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Case Study

CLINICAL EVALUATION OF *PUSHKARMOOLA ARKA* NEBULIZATION IN *TAMAK SHWASA*

Prince Singla[1]*, Priyanka Wadhwa[2], Rahul Sharma[3], Prajjwal Baranwal[1]
*[1]PG Scholar, [2]Professor, Kaumarbhritya Department, [3]Associate Professor, Department of Rasa Shastra and Bhaisjya Kalpna, Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan, Uttarakhand, India.

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ABSTRACT

In Ayurveda, *Tamak Shwasa* is included under the spectrum of *Shwasa Roga* and is predominantly manifested by recurrent episodes of marked respiratory distress associated with a sense of suffocation. The etiopathogenesis of this condition is explained as the simultaneous vitiation of *Pranavayu* and *Kapha Dosha*, which localize in the pulmonary region and produce obstruction within the *Pranavaha Srotasa* (channels responsible for respiration). Owing to similarity in clinical presentation, *Tamak Shwasa* can be correlated with bronchial asthma described in contemporary medical literature. Numerous formulations derived from medicinal plants have been documented in classical Ayurvedic treatises for the management of *Tamak Shwasa*. In recent times, nebulization has emerged as an effective aerosol-based drug delivery modality in the treatment of bronchial asthma. This method enables direct deposition of micronized liquid medication into the airways, thereby facilitating rapid alleviation of acute respiratory symptoms. Compared to oral administration, nebulization offers improved patient compliance, eliminates concerns related to taste, and is especially advantageous in paediatric populations. Furthermore, localized drug delivery ensures a quicker therapeutic response due to direct action at the site of pathology. Considering these factors, the present clinical study was designed to assess the safety and therapeutic potential of *Pushkarmoola Arka* administered through nebulization in patients of *Tamak Shwasa* (bronchial asthma). *Pushkarmoola* is described as possessing *Katu* and *Tikta Rasa*, *Laghu* and *Tikshna Guna*, *Ushna Virya*, and *Katu Vipaka*, and is traditionally recognized for its *Kapha-Vata Shamana* properties. When prepared as a water-based *Arka* and delivered via nebulization, the formulation is anticipated to exert prompt symptomatic relief by directly influencing the respiratory tract, which represents the principal locus of disease manifestation.

INTRODUCTION

Allergic disorders constitute a major global health concern in the paediatric population, affecting nearly 30–35% of children worldwide, with bronchial asthma being the most frequently encountered chronic condition among them. Epidemiological studies indicate that the worldwide prevalence of asthma is approximately 11% in children aged 6–7 years and about 9.1% in those aged 13–14 years.

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In the Indian paediatric population, reported prevalence rates show considerable variation, ranging from 2% to 18.2%. Gender-based observations reveal a higher prevalence of asthma in boys (8.0%) compared to girls (5.9%). Beyond its role as a leading cause of pediatric hospital admissions, childhood bronchial asthma significantly impairs quality of life, resulting in recurrent school absenteeism and restricted participation in play and social activities

Shwasa is one of the clinical conditions described in Ayurveda meaning 'difficulty in breathing' - There are five types - *Kshudra Shwasa, Maha Shwasa, Chinna Shwasa, Urdhva Shwasa* and *Tamaka Shwasa.* Bronchial asthma is one of the respiratory problems. It may be associated with *Tamaka Shwasa* because of the similarity of their signs and symptoms.

Tamak Shwasa is described as a disorder caused by *Pratiloma Gati* of *Vayu*, in which *Vata* moves in an abnormal upward direction within the *Pranavaha Srotas*. This altered movement leads to the accumulation and aggravation of *Kapha* in the *Shira* and *Greeva* (head and neck region), resulting in *Margavarodha* (obstruction of the respiratory passages). The obstruction produces broncho-constriction and manifests clinically with symptoms such as *Peenasa* (nasal discharge), *Ghurghuraka* (wheezing sound), dyspnea, and difficulty in breathing, especially while lying down. Patients typically experience relief in a sitting posture, present with wide-open eyes, profuse sweating over the forehead, and dryness of the mouth. Based on these features, *Tamak Shwasa* can be correlated with bronchial asthma.

Bronchial asthma is a chronic inflammatory condition of the airways characterized by repeated episodes of wheezing, shortness of breath, chest tightness, and coughing, particularly during night-time or early morning hours. The underlying airway inflammation increases sensitivity to various triggering factors.

The prevalence of asthma has been rising steadily due to changes in lifestyle, dietary habits, environmental pollution, and exposure to triggers such as dust, cold air, smoke, pollen, house dust mites, and respiratory infections. Childhood asthma shows considerable variability in its presentation and severity, differing from one patient to another.

Bronchial asthma in children is a common clinical condition and represents one of the leading causes of paediatric outpatient visits. The incidence and recurrence rates are significantly higher in children compared to adults, owing to distinctive anatomical and physiological characteristics of the paediatric airway and an underdeveloped immune system.

Case Report

Chief Complaint

A 7-year-old female patient came with the chief complaints of difficulty in breathing aggravated since 7 days associated with intermittent fever, coughs with whitish colored sputum, and generalized weakness.

History of Present Illness

The patient was apparently healthy about three years ago. One day, he suddenly developed cough and difficulty in breathing, for which he consulted a local pediatrician. He was prescribed azithromycin and levocetirizine, which provided temporary relief. Since then, the patient has been experiencing recurrent episodes of similar complaints. Each time, symptoms subsided temporarily with medication.

In December 2023**,** he again developed breathlessness associated with cough and whitish expectoration. He required hospital admission and was subsequently diagnosed with bronchial asthma. He was treated accordingly and advised to use Budecort and Asthalin inhalers during episodes, which gave temporary relief. over time, the attacks became more frequent and severe, even with regular inhaler use. The symptoms began to affect his sleep, appetite, physical growth, and schooling**.**

With persistent symptoms and minimal improvement despite ongoing allopathic treatment, the parents- out of concern and hope for better long-term management- brought the child to Patanjali Ayurvedic Hospital on 29/10/2025 for further evaluation and treatment.

Respiratory System

O/E

Inspection of the chest– Bilateral symmetrical Accessory muscle used for respiration is present i.e. sternocleidomastoid muscle. Type of breathing- abdomino thoracic, no any chest deformities, no any scars. Respiratory rate: 24/min.

Palpation: Tenderness- Absent, position of the trachea is centrally placed. movement of chest bilaterally symmetrical

Percussion: Resonant all over the lung field.

Auscultation: B/L wheezes present (more in left lung compared to right). Air entry B/L mildly decreased.

CVS- S1 S2 normal, no murmur

CNS – Alert/ Awake

P/A – Soft, bowel sound +nt

Ashtasthanagata Pariksha

Nadi (pulse) – 84b/min *Vataja Nadi*
Mala (stool) – once in a day
Mootra (urine)-2-3 times a day
Jihwa (tongue) – *Alipta*
Shabda (speech) – *Krichatbhashitum*
Sparsha (touch) – *Samsheetushna*
Druk (eyes)- *Sam*
Akruti (built)- Moderate

Dashavidha Pariksha

Prakruti – Vata-Kapha
Vikruti – Prana Vata and Avalambaka Kapha
Sara – Madyama
Samhanana – Madyama
Pramana – Height -123cm, weight- 21kg,
BMI– 13.9
Satwa – Avara
Satmya – Madyama
Aharashakti – Madyama
Vyayama Shakti – Madyama

Vaya – Madyama

Past history

k/c/o bronchial asthma since 3 years.

Personal history

Birth History

The child was born at term via normal vaginal delivery with no perinatal complications. Birth weight and immediate neonatal period were reported to be normal. Developmental milestones- gross motor, fine motor, language, and social- were achieved within expected age ranges.

Immunization History

Immunizations are up to date as per national immunization schedule. No adverse reactions to vaccines reported

Family history

Her mother suffering from bronchial asthma since birth. All other family members are said to be healthy.

Treatment

Pushkarmoola Arka Nebulization 3ml three times a day for 7 days.

History of Presenting Complaints

Symptoms	**Present /Absent**	**Duration**
Wheezing	Present	6-7 Days
Breathlessness in attack	Present	1-2 Days
Cough • Productive • Non-Productive	Productive	7-8 Days
Sputum • Colour • Consistency • Quantity	Mucoid (thick, sticky, jelly like)	7-8 days
Shortness of breath	Present	4-5 days
Tightness of chest	Present	1-2 days
Discomfort on lying down	Present	6-7 days
Sleep disturbance due to lying down	Present	6-7 days
Others (specify)		

Before and After Treatment

Score	**On the day of admission**	**At day 3**	**At day 7**	**At day 15**
Dyspnea	Severe	Moderate	Mild	Improved
Chest pain	Absent	Absent	Absent	Absent
Cough	Productive cough	Mild cough	Cough on/off	Improved
Coryza	Absent	Absent	Absent	Absent
Sore Throat	Absent	Absent	Absent	Absent
Frequency of attack	Once in week	-	-	Improved
Duration of attack	1-2 hour	-	-	Improved
Wheezing/Rhonchi	B/L severe wheezes present	B/L moderate wheezing	B/L chest clear	B/L chest clear
Sleep pattern	Poor sleep	Poor sleep	Improved	Improved
Swollen lymph node	Absent	Absent	Absent	Absent
Expectoration/phlegm	Present	Present	Mild	Absent
Vomiting	Absent	Absent	Absent	Absent
Crepitation	Absent	Absent	Absent	Absent
Hoarseness of voice	Present	Present	Mild	Mild

PEFR (Peak Expiratory Flow Rate)

PEFR	Grading
>80 of normal PEFR	0
79 – 70 % of normal PEFR	1
69 – 60 % of normal PEFR	2
59 – 50 % of normal PEFR	3

80-100 % - green zone – more than 400 litre/min
50-80% - yellow zone - 250-400 litre/min
Less than 50 % - red zone – less than 250 litres/min Grade 0- more than 400 liter/min
Grade 1 – 350-400 litre/min
Grade 2 - 300-350 litre/min
Grade 3 - 250- 300 litre/min

RESULT

Table 15: PEFR

	On the day of admission	At day 3	At Day 7	At day 15
Value	Grade 3	Grade 2	Grade 2	Grade 1

DISCUSSION

The present case of *Tamak Shwasa* demonstrated significant clinical improvement after nebulization with *Pushkarmoola Arka*, indicating its potential as an effective adjuvant therapy in asthma management. *Pushkarmoola Arka* acted as a bronchodilator, anti-inflammatory, and antioxidant, which aligns with both Ayurvedic principles and modern phytochemical findings.

GC–MS analysis of *Pushkarmoola Arka* revealed peaks corresponding to Bohlmann K2631, Naphtho(2,3-b)furan-2(3H)-one derivatives, and 1,5,9-Cyclododecatriene, 1,5,9-trimethyl-, compounds known for their anti-inflammatory, bronchodilatory, and antioxidant pharmacological properties. These constituents likely contributed to the reduction of bronchospasm, improvement in airway patency, and overall symptom relief observed in the patient.

Thus, the case supports that nebulized *Pushkarmoola Arka* can serve as a safe and effective therapeutic option for *Tamak Shwasa*, offering rapid symptomatic relief with a favourable safety profile. Further controlled clinical studies are recommended to validate these findings and establish standardized protocols for its therapeutic use.

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***Address for correspondence**
Dr. Prince Singla
PG Scholar,
Kaumarabhritya Department,
Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan,
Uttarakhand, India.
Email: princesngl4@gmail.com