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Research Article

Role of Ati Lavana Rasa in the Etiopathogenesis of Hypertension: An Integrative Ayurvedic Perspective

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Abstract

Background: Hypertension is a major global public health challenge and a leading risk factor for cardiovascular, cerebrovascular, and renal morbidity and mortality. Although hypertension is extensively studied in modern medicine, its etiopathogenesis remains largely descriptive. Ayurveda offers a unique interpretative model; however, a standardized explanation of hypertension with reference to specific dietary factors such as Ati Lavaṇa Rasa (~excessive salt intake) is still lacking. This review attempts to bridge this conceptual gap by integrating classical Ayurvedic principles with contemporary scientific understanding.

Objective: * To analyze classical Ayurvedic references related to Lavaṇa Rasa and Rakta-Pitta Dushti, * To correlate Ayurvedic concepts with the modern pathophysiology of hypertension. * To highlight preventive implications through Nidāna Parivarjana (~avoidance of causative factor).

Materials and Methods: A comprehensive review of classical Ayurvedic texts, including Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, was undertaken. Relevant contemporary medical literature, published research articles, and recent scientific updates from standard biomedical databases were also analyzed to elucidate the etiological factors and pathophysiological mechanisms of hypertension.

Results: Excessive consumption of Lavaṇa Rasa leads to Pitta and Rakta (~blood) aggravation, resulting in Rakta Ati-Vriddhi, increased blood volume, and elevated cardiac output. Aggravation of Ranjaka Pitta contributes to increased blood viscosity, while Sādhaka Pitta influences cardiac rhythmicity and workload and causes emotional and mental disturbances leading to stress, collectively promoting hypertension. These Ayurvedic mechanisms show close parallels with modern concepts of hypervolemia, increased blood viscosity, stress, cardiac output elevation,

Conclusion: Hypertension can be comprehensively understood as a multifactorial disorder involving the interplay of Vata, Pitta, and Kapha through disturbances in Dosha, Dhatu, and Srotas. Excess salt intake acts as a key modifiable etiological factor. Integrating Ayurvedic principles with modern scientific knowledge may provide a broader conceptual framework for understanding hypertension and may support the development of holistic preventive and therapeutic strategies.

Keywords: Hypertension; Lavaṇa Rasa; Rakta Ati Vridhi; Ayurveda

Introduction

Despite the rapid expansion of contemporary medical science into numerous specialties and super-specialties, Ayurveda continues to uphold its distinct identity through its holistic and integrative understanding of the human body. Unlike reductionist approaches that analyze organs and systems independently, Ayurveda conceptualizes the body as a cohesive and dynamic whole, wherein structural and functional components operate through interdependence and continuous interaction. Interpreting human physiology in a fragmented manner often limits the understanding of this intrinsic interconnectedness. In recent years, modern healthcare has increasingly recognized the significance of a comprehensive model of health encompassing physical, mental, and spiritual dimensions. This approach has been fundamental to Ayurvedic philosophy since antiquity.

While modernization has enhanced comfort and efficiency in daily living, it has simultaneously introduced substantial lifestyle alterations that predispose individuals to non-communicable diseases. Irregular dietary practices, reduced physical activity, and sustained psychological stress disturb both mental balance and physiological homeostasis, leading to psychosomatic dysregulation. According to the World Health Organization, approximately 1.4 billion individuals aged 30–79 years were affected by hypertension globally in 2024 [1]. In India, hypertension represents a major public health concern, contributing to nearly 57% of stroke-related mortality and 24% of deaths due to coronary heart disease [2]. Furthermore, findings from the ICMR–INDIAB study (2023–2024) indicate that over 315 million Indian adults—representing nearly 30–35% of the adult population—are living with hypertension. Uncontrolled hypertension is a well-established risk factor for serious complications involving vital organs, including the brain, heart, kidneys, and peripheral vasculature [3].

Hypertension is commonly described as a "silent disease," as nearly 85% of affected individuals remain undiagnosed owing to the absence of overt clinical manifestations [4]. In approximately 95% of cases, the precise etiology cannot be clearly determined, categorizing it as essential hypertension, although genetic susceptibility and environmental influences are acknowledged as significant contributing factors [5].

From an Ayurvedic perspective, hypertension is not described as a distinct Vyadhi (~disease) but is understood as Anyukt Vyadhi through the assessment of functional imbalances involving Doshas, affected tissues (~Dūṣyas), and deranged Srotas (~body channel). Excessive consumption of salt (Lavaṇa Rasa) is considered as a major contributory factor in its manifestation. Various Ayurvedic scholars have proposed interpretations to explain the condition; however, a universally accepted and standardized model of its Samprapti (~etiopathogenesis) remains lacking, resulting in diverse viewpoints and ongoing scholarly discourse. Against this background, the present study seeks to comprehensively elucidate the pathogenesis of hypertension with special reference to excessive salt intake as a causative factor, integrating classical Ayurvedic concepts with contemporary scientific understanding while critically examining existing perspectives.

Aim and Objectives

The present study aims to critically examine the contribution of excessive salt intake (Ati Lavaṇa Rasa) in the pathogenesis of hypertension from an Ayurvedic standpoint, and to establish a conceptual correlation between these classical principles and contemporary biomedical understanding.

Materials and Methods

The study is based on an extensive review of classical Ayurvedic texts, relevant contemporary literature, and recent research findings. In addition, scientifically validated information was sourced from internet-based databases to comprehensively analyze the etiological factors and pathophysiological mechanisms of hypertension from both Ayurvedic and modern medical perspectives.

Literature Review

Concept of blood pressure: Contemporary and ayurvedic perspectives

Contemporary medical science offers a detailed understanding of the mechanisms underlying the regulation and pathogenesis of hypertension. To achieve a comprehensive sense, it is essential to interpret these modern concepts in the light of Ayurvedic principles. Hypertension is now understood as a multifactorial condition resulting from the interaction of genetic predisposition and environmental influences. Clinically, it is diagnosed when systolic and diastolic blood pressure values exceed defined thresholds associated with an increased risk of cardiovascular morbidity and mortality [6].

Blood pressure is primarily determined by two key physiological parameters: cardiac output and peripheral vascular resistance. Cardiac output is further dependent on stroke volume and heart rate. Any sustained increase in either cardiac output or peripheral resistance—often due to disturbances in regulatory mechanisms under the influence of risk factors—ultimately leads to elevated blood pressure.

Excess salt intake (Ati Lavaṇa Rasa) and blood pressure: Ayurvedic interpretation

Acharya Charaka, while describing the effects of excessive intake of Lavaṇa Rasa, states that it aggravates Pitta and increases Rakta Dhatu ("Pittam Kopayati, Raktam Vardhayati") [7].

Raktam vardhayati

The increase in Rakta Dhatu denotes a state of Rakta Ati-Vriddhi.

Acharya Sushruta describes "Sirā-Pūrṇatva" (~Fullness of veins) as a cardinal feature of Rakta Ati-Vriddhi [8]. It may be correlated with increased blood volume or hypervolemia. From a modern physiological viewpoint, increased blood volume raises the mean circulatory filling pressure, thereby enhancing venous return to the heart. This results in increased cardiac output and, consequently, elevated arterial pressure [9].

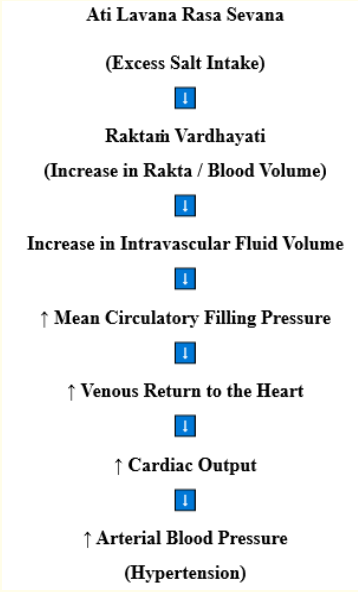

Figure 1: Samprapti (etiopathogenesis) of Atilavan sevan causing increase cardiac output.

Role of Pitta Dosha in hypertension

Ranjaka Pitta and blood viscosity

Among the five subtypes of Pitta, Ranjaka Pitta plays a pivotal role in the formation of Rakta Dhatu. Its aggravation leads to exaggerated conversion of Rasa (~plasma) into Rakta Dhatu (~blood), resulting in increased concentration of blood constituents, particularly hemoglobin [In modern science, hemoglobin imparts the characteristic red color to blood, which closely corresponds to the Rañjana karma (~color-imparting function) attributed to Rañjaka Pitta in Ayurveda]. This contributes to increased blood viscosity. Contemporary studies have demonstrated a direct relationship between blood viscosity and arterial blood pressure, establishing hyperviscosity as a contributory factor in hypertension [10].

Figure 2: Samprapti of vitiated Pitta causing increase vascular resistance.

Sādhaka Pitta and cardiac activity

The intrinsic rhythmicity of the heart is generated by electrical impulses originating from the sinoatrial (SA) node, produced through the rapid influx of sodium and calcium ions and efflux of potassium ions across the nodal membrane [11]. These ionic movements reflect the functional attributes of Pitta Dosha—Tikshna (sharp), Drava (fluid), and Sara (mobile) [12]. Sādhaka Pitta, located in the Hridaya [13], can be considered responsible for regulating these processes. Its aggravation enhances ionic activity, increases cardiac workload, and contributes to elevated blood pressure.

Sadhaka Pitta and stress

Sādhaka Pitta, is described as responsible for buddhi (~intelligence), medhā (~memory), abhimāna (~ self -esteem) and the accomplishment of desired objectives ("Buddhi–Medhā–Abhimānādye Abhipretārtha Sādhanāt"). This description indicates that Sādhaka Pitta plays a crucial role in emotional regulation, cognition, and mental processing. These functions may be correlated with higher cerebral activities of the brain, which are mediated through complex neurotransmitter mechanisms.

When there is vitiation of Sadhak Pitta, the neural processing of emotional and mental functioning of the brain is disturbed, which further contributes to stress-related conditions.

And it is widely known that stress can cause hypertension through repeated blood pressure elevations as well as by stimulation of the nervous system to produce large amounts of vasoconstricting hormones that increase blood pressure [14].

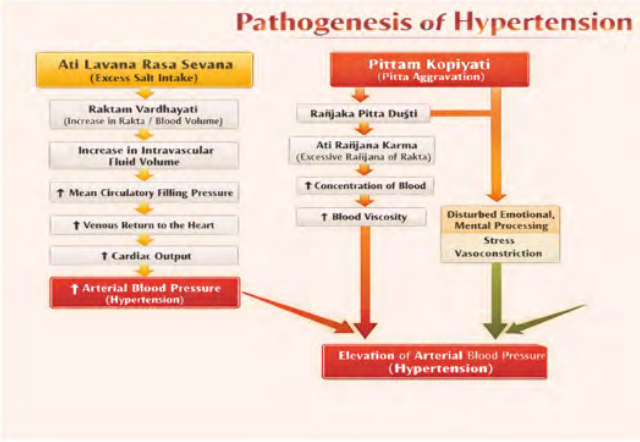

Figure 3: Integrative Samprapti (Etiopathogenesis) of Ati Lavan Rasa (excess salt intake).

Discussion

Hypertension, though described in modern medicine as a multifactorial lifestyle disorder, finds a clear etiopathogenic explanation within the Ayurvedic framework when viewed through the lenses of Ati Lavana Rasa Sevana (~excess salt intake). Excessive intake of Lavana Rasa (~salt) leads to Pitta dusti and Rakta vridhi, which in contemporary terms may be correlated with increased plasma volume, vascular reactivity, and altered endothelial function. The convergence of these mechanisms culminates in the sustained elevation of arterial blood pressure.

From a therapeutic and preventive standpoint, Nidāna Parivarjana (~avoidance of causative factor) emerges as the cornerstone of management. Avoidance of Ati Lavana Rasa, regulation of dietary habits, and correction of lifestyle factors that are directly responsible for the root cause of the disease rather than merely suppressing its manifestations. Such an approach is particularly relevant in the context of essential hypertension, where a single causative pathology is often elusive in modern biomedical paradigms.

Equally significant is the concept of Samprāpti Vighaṭana, wherein interventions are directed toward breaking the pathological cascade at multiple levels. Measures aimed at clearing srotorodha, normalizing Pitta–Rakta dynamics, and improving Sira guṇa can effectively reduce peripheral resistance and circulatory load. This holistic strategy underscores Ayurveda's strength in addressing complex lifestyle disorders through systemic correction rather than organ-specific intervention.

The implications of this integrative understanding extend beyond clinical practice. For future healthcare delivery, incorporating Ayurvedic principles of diet regulation, weight management, and salt moderation into routine preventive strategies may significantly reduce the burden of hypertension. From a research perspective, there is substantial scope for interdisciplinary studies exploring correlations between Ayurvedic constructs such as Lavana rasa and Sira with modern biomarkers of vascular function, and salt sensitivity. At the policy level, these insights support the development of culturally appropriate public health guidelines that emphasize dietary moderation, lifestyle correction, and early prevention, aligning traditional wisdom with contemporary evidence-based medicine.

Conclusion

In conclusion, the Ayurvedic interpretation of Ati Lavana in the etiopathogenesis of hypertension offers a comprehensive, preventive, and sustainable model of care. Emphasizing Nidāna Parivarjana and Samprāpti Vighaṭana not only enhances clinical outcomes but also provides a robust framework for future practice, research innovation, and health policy formulation.

Conflict of Interest

There was no conflict of results.Top of Form

Bottom of Form

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