

## REVIEW ARTICLE

# Understanding *Vatavyadhi* as a Sequela of Metabolic Syndrome And Its Management - A Review

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### ABSTRACT

The increasing occurrence of metabolic syndrome in children and teenagers is alarming due to the potential for significant long-term health issues. Recognizing and addressing this condition early are essential to avoid permanent harm. Traditional Ayurvedic perspectives offer valuable insights into this issue. Conditions such as *Sthaulya* (Obesity), *Prameha* (Diabetes), *Shonita Dusti* (Blood Impurity), and *Dhamani Pratichaya* (Vascular Diseases) share similarities with metabolic syndrome. These arise from excessive intake and accumulation (*Santarpana nidana*), leading to a build-up of *Kapha* (one of three senses of humor having unctuous property) and *Medha* (fat), eventually affecting other *Doshas* (humor) and multiple tissues. Ayurvedic treatments aim to manage these conditions, as they tend to be chronic and prone to complications, potentially progressing to *Vatavyadhi* (neurological disorders) over time. The interplay of *kapha* and *medha* in blocking channels (*Margavarana*) is a crucial consequence of these conditions, contributing to the development of *vatavyadhi*. This review article highlights the importance of early intervention and traditional Ayurvedic approaches in managing metabolic syndrome-like conditions in children and adolescents to prevent long-term complications.

## 1. INTRODUCTION

Metabolic diseases are very common in India. Research indicates that in India's urban areas, the prevalence of metabolic syndrome is approximately 25%; 31% of women and 18.5% of men are affected. The prevalence of age-related diseases is increasing in both genders.<sup>[1]</sup> This is greater than the results of another international study, which calculated that 13–15% of Indian adults have metabolic syndrome, with females being more affected than males (approximately 8%–9% and 18–19%, respectively).<sup>[2]</sup> The world's health is increasingly at risk from the rising tide of metabolic diseases, which are defined by a number of interrelated risk factors like obesity, dyslipidemia, and hyperglycemia. These complex entities, impacting individuals at increasingly earlier ages, often result in many chronic issues. More recent research suggests that metabolic syndrome is associated with an increased risk of neurological disorders, going beyond its conventional association with heart disease and Type 2 Diabetes.<sup>[3]</sup> Among these, *Vatavyadhi*, a concept from the ancient wisdom of Ayurveda, presents a unique lens through which to understand the long-term neurological consequences of metabolic dysregulation. This review explores the complex

relationship between metabolic imbalances and the development of *Vatavyadhi*, providing insights into the pathophysiological mechanisms that underlie the condition and strategies for managing it effectively. We bridge the gap between modern medicine and the age-old wisdom of Ayurveda to reveal possible therapeutic pathways that may be able to lessen the neurodegenerative effects of metabolic disorders. Our goal in conducting this research is to shed light on the subtleties of *Vatavyadhi* and open the door to a comprehensive method of treating metabolic diseases and the neurological effects they cause.

## 2. METABOLIC SYNDROME

The metabolic syndrome, commonly referred to as syndrome X or insulin resistance syndrome, is a major risk factor for type 2 diabetes and heart disease.<sup>[4]</sup> Metabolic problems are involved, such as insulin resistance, dyslipidemia, elevated triglycerides, low HDL, high blood pressure, and central obesity. Its frequency increases with age, obesity, and the chance of getting Type 2 Diabetes. The risk of developing metabolic syndrome can be raised by a number of factors, including aging, lipodystrophy, sedentary lifestyles, and excess weight (especially around the waist).<sup>[4]</sup> The precise cause is unknown and probably involves a number of variables. Insulin resistance, which is made worse by an increase in fatty acid metabolites within cells,

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is the fundamental cause of metabolic syndrome. These metabolites promote the production of glucose and triglycerides in the liver while interfering with insulin signaling pathways and causing triglyceride accumulation in the muscles and liver.<sup>[4]</sup>

Pro-inflammatory cytokines can also increase in the presence of extra fat tissue. The symptoms of metabolic syndrome are not particular. Central obesity, elevated blood sugar, low HDL cholesterol, high triglycerides, and high blood pressure are some of its main symptoms.<sup>[5]</sup>

### 3. VATAVYADHI

One of the three *Doshas* (*humors*) that govern various body functions, especially balance and movement, is *Vata*. A basic idea known as *Vatavyadhi* denotes a range of illnesses that are caused by an imbalance in the *Vata dosha*. There are two reasons for this imbalance: *Dhatu kshaya* (*depletion of body elements*) and *Margavarana* (*blockage of channels*).<sup>[6]</sup> The way these disorders affect how the body moves and how the nervous system works is what makes them unique. Anxiety, neurological disorders, digestive problems, and joint pain are common manifestations of symptoms. The most prevalent form is neurological conditions.

### 4. VATAVYADHI AS SEQUELAE OF HYPERTENSION

Hypertension is an abnormality of *Rakta Dhatu* (blood tissue), popularly known as *Shonita Dushti* (vitiation of blood tissue), because symptoms-*Shiroruk* (headache), *Klama* (fatigue), *Anidra* (sleeplessness), *Bhrama* (giddiness), *Buddhi Sammoha* (unconsciousness), and *Kampa* (tremors) which akin to the manifestation of hypertension.<sup>[7]</sup> *Mada* (intoxication), *Murcha* (fainting), and *Sanyasa* (syncope) are equally true with Malignant Hypertension.<sup>[7]</sup> Many predisposing factors cause Hypertension is - Excess alcohol intake (*Madhyapana*), Excess intake of salt (*Lavana*), Sedentary lifestyle (*Atisnigdha*, *Madhura*, *Ahara*, and *Divaswapna*), Mental stress (*Krodha*, *Bhaya*, and *Shoka*), Physical strain (*Shrama*), Seasonal variation (*Ritu sandhi*), Genetical factors (*Beeja Dushti*), and Diseases that an act as cause (*Nidanarthaka Rogas-Madhumeha*, *Shoulya*, *Hridroga*, *Vrikka Roga*, etc.).<sup>[7]</sup> Manifestation of *Shonita dushti* (vitiation of blood tissue) due to vitiated *Dosha* (humor) will cause vitiation of blood in *Shiras* (head), and it will lead to *Abhighata* of *Shiro marma* (injury to the vital point, the head).<sup>[8]</sup> The literature mentions that not only external causes but also internal vitiated *dosha* can cause injury to vital points.<sup>[9]</sup> *Manyastambha* (stiffness of neck), *Ardita* (hemiplegia with facial palsy), *Chakshuvibhrama* (improper movements of eyeball/lesions in sight), *Moha* (state of confusion), *Udveshtana* (twisting pain in the head), *Cheshtanasha* (loss of body functions), *Kasa* (cough), *Shwasa* (breathlessness), *Hanugraha* (stiffness of jaw), *muka* (dumbness), *gadgada* (hoarseness of voice), *akshinimilana* (ptosis), *Gandaspadana* (twitching in cheek), *Jrambhana* (excessive yawning), *Lalasarava* (dribbling of saliva), *Svara-Hani* (aphonia), *Vadana Jihmatva* (deviation of face), etc., are caused by the injury to *Shiro Marma* (vital point, the head).<sup>[10]</sup> The diagnosis of *Vatavyadhi* is based on the aforementioned symptoms.

### 5. VATAVYADHI AS SEQUELAE OF OBESITY AND HYPERLIPIDEMIA

A sedentary lifestyle, an abundance of fat and carbohydrate-rich foods, and excess food are the causes of obesity, which is a *Santarpanajanya Vikara* (the disease caused by anabolic factors). Genetic factors may also be to blame, in which case only the fat tissue, or *medho dhatu*,

receives excess nutrition. Over consumption of *medhas* and *Kapha* leads to *Avarana* (blockage) of *vata* in the *Kosta* (alimentary canal), which intensifies the digestive fire (*Jataragni*). This, combined with continued food intake, results in obesity.<sup>[11]</sup> By obstructing the blood's path due to *Upalepa* of *medhas* (fat coating) in vessel walls, the *medhas* cause *Shonita Abhishyandana* (vitiation of blood due to fat). This failure to distend the artery results in *Dhamani Praticchaya* (atherosclerosis), which in turn causes *Hridroga*.<sup>[12]</sup> In the long term, *Vatavyadhi*, such as *Gridhrasi* and *Pakshaghata*, is induced by the *Avarana* to *Vata* by *Kapha* and *Medha*.<sup>[13]</sup>

### 6. VATAVYADHI AS A SEQUELAE OF DIABETES

The *Prameha* provides an explanation of the diabetes context. Among the illnesses brought on by *Santarpana nidana* (anabolic causative factors), it is a significant disorder. It is typified by the constant morbidity of *Medhas* and *Kapha*, which subsequently affects other *Doshas* and causes multiple *dhatu*s. Other body elements such as *Mamsa*, *Sukram*, *Sonitam*, *Vasa*, *Majja*, *Rasa*, *Ojas*, *Lasika*, and *Sariraja Kleda* will be vitiated by the entity, *Kapha*, and *Medhas*. As a result of aggravating, these body parts lose their inherent consistency (*Bahu-abaddham*). There is an increase in the body's watery components. These are attracted to the bladder, which generates *Prameha*.<sup>[14]</sup> The *vata* will aggravate and desiccate the body elements when the other two humours (*Kapha* or *Pitta*) become chronic or diminished. Therefore, in *Prameha*, the *Bahu-abaddha Dosha* and *Dushya* (especially *Kapha* and *Medhas*) will obstruct the channels and result in *Vatavyadhi*, which is *Margavarana janya* (*Vatika* disease manifested due to channel blockage), or on chronicity, the depletion of body elements will result in *Vatavyadhi* due to *Dhatu kshaya* (*Vatika* disease manifested due to bodily element depletion).

### 7. DIAGNOSTIC APPROACH

When diagnosing a *Vatavyadhi*, one should take into account only the pathophysiology of the disease and not the external manifestations of symptoms. In this instance, the diagnostic technique known as *Upasaya-Anupasaya* or trial-and-error, should be applied. For example, illnesses that can be cured but are not responsive to cold, hot, unctuous, dry, or other therapies should be classified as blood vitiation diseases in the case of *Shonita Dushti*.<sup>[15]</sup> This is an essential part of the treatment plan. Before selecting a treatment plan, patients with *Vatavyadhi* should always have their metabolic syndrome checked. Treatment for *Vatavyadhi* resulting from obstruction of body channels (*Margavarana*) differs greatly from that for *Vatavyadhi* resulting from depletion of body elements (*Dhatu kshaya*).

### 8. TREATMENT APPROACH

#### 8.1. Vatavyadhi and Hypertension

Purification of vitiated blood should be the main goal of the treatment protocol. For *Shonita dushti*, therapies such as *Rakta moksha* (blood letting), *Virechana* (purgation), *Upavasa* (fasting), and treatment of *Raktapitta* (bleeding disorders) are recommended.<sup>[16]</sup> Bloodletting should be combined with restorative treatments based on the patient's condition and level of strength. In this case, therapies that aim to purify the blood by preventing further vitiation of the *Vata dosha* should always be the first line of treatment for *Prakupita Vata*, or aggravated *Vata dosha*. It is possible to administer *Rasayanas* (rejuvenating therapies) such as *Triphala prayoga*, *Shilajatu rasayana*, *Pippali rasayana*, and *Kaumbha sarpi*, as they do not vitiate *rakta*.<sup>[17]</sup>

## 8.2. Vatavyadhi and Obesity

In reality, *Langhana* therapies, also known as non-nourishing therapies, will worsen pure *Vata prakopa*, or aggravated *Vata*. In this case, the *Prakupita vata* is caused by the *Margavarana*. The *Vata Roga* will diminish when the *Kapha dosha* and *Medhas* are reduced. Because of this, non-nourishing diets should be followed in order to reduce *Kapha* and *Medas*, which are the factors that cause obesity and hyperlipidemia. In the event of *Avaranaja-Vatavyadhi*, the *Sthaulya*, *Srotoshuddhikaraka chikitsa*, and *Vatanulomana* are to be performed. It is possible to apply *Rasayana prayoga* (rejuvenating therapies) to relieve *Kapha* and *Medhas*, such as *Guggulu rasayana*, *Shilajatu rasayana*, and *Loharaja prayoga*.<sup>[18]</sup>

## 8.3. Vatavyadhi and Diabetes

Diabetes is a disease that can manifest both types of *Vata vyadhi*. As the *Kapha and Medhas* play a significant role in the pathophysiology of Diabetes, *Margavarana janya Vatavyadhi* can be sequelae. Depletion of body elements, a characteristic of this disease, will also lead to *Dhatu kshaya janya vata vyadhi* as it advances. Accordingly, it is important to carefully examine the patients and administer both the *Bhrimana* and the *Langhana* types of therapies cautiously in this situation. Where *Kapha* and *Medhas* involvement is greater, *Sodhana* (purificatory therapy) is the primary recommended treatment. Treatment should be undertaken after *santarpana* (nourishing).<sup>[19]</sup> *Apapatarpana* treatment is recommended if the body has an excess of *Kleda* (watery elements), *Medhas* (fat), and *kapha*.<sup>[20]</sup> Nutrient therapy is indicated if the patient is weak and all body elements have been exhausted.<sup>[21]</sup> Given their critical roles in the manifestation of diabetes, *kapha*, and *medhas* should not be aggravated by medications or treatment procedures when applying nourishing therapies. So such therapies should be selected carefully.

## 9. DISCUSSION

Metabolic syndrome is a condition with several risk factors that can lead to different health problems, including some neurological disorders. These disorders are similar to what is described in Ayurveda as *Vatavyadhi*. Ayurveda views *Vatavyadhi* as a result of imbalance in the *Vata dosha* which can be disturbed by factors such as *Dhatu kshaya* and *Margavarana*. In Ayurveda, diseases are classified into two types: *Paratantra* (secondary diseases caused by another condition) and *Swatantra* (primary, independent diseases). Metabolic syndrome is considered a *Swatantra vyadhi*, an independent condition, which leads to *Paratantra Vatavyadhi*, a secondary neurological disorder. The treatment approach in Ayurveda suggests first addressing the primary condition (*Swatantra vyadhi*). If the primary condition improves, the secondary condition (*Paratantra vyadhi*) will also get better. The treatment also depends on the severity of the diseases. The more severe disease (whether *Swatantra* or *Paratantra vyadhi*) should be treated first without worsening the other.<sup>[22]</sup> As far as metabolic syndrome is concerned, it will result in the accumulation of vitiated body elements. These substances will clog inside the body's channels (*Sroto-rodha*). One of the causes of *Vata Vyadhi's* manifestation is the *Sroto-rodha*, also known as *Maragavarana*. Choosing treatments that can open the channels is the approach to handling this kind of *samprapti* (pathophysiology). Then, it will relieve the *Prakupita vata* easily. Instead, applying the usual *Vata-pacifying* treatment approach here may aggravate the illness and *Vata vyadhi*, which is its aftereffect. Furthermore, nourishing therapies should be used if the *Vata* is aggravated by the loss of vital body elements (*Dhatukshaya janya*). From hypertension-induced by *Shonita dushti* to obesity-related obstruction of channels due to *Medhas*, each metabolic

aberration contributes to *Vatavyadhi's* multifaceted manifestations. Understanding these links helps doctors treat the condition more holistically, addressing not just the symptoms but also the underlying metabolic issues. Ayurveda provides ways to diagnose and treat these imbalances with personalized treatments. This can include different therapies for blood impurities, diets for obesity, or combined treatments for diabetes, aiming to balance the doshas and reduce the effects of metabolic syndrome on the nervous system. Combining Ayurveda with modern medicine could be very beneficial for treating metabolic diseases and their effects on neurological health. Working together, Ayurvedic practitioners and modern healthcare providers can create comprehensive treatment plans that improve patient outcomes. This integration could lead to better overall health for people globally by combining traditional knowledge and modern medical advances.

## 10. CONCLUSION

The relationship between metabolic disorders and *Vatavyadhi*, as explored through the lens of Ayurveda, underscores the imperative for a holistic approach to the health. This review explains how problems with the body's metabolism can cause neurological issues, showing that diseases can have various causes and ways to treat them. Ayurvedic principles offer invaluable insights into personalized diagnosis and treatment, emphasizing the importance of restoring *doshic* equilibrium to alleviate *Vatavyadhi's* neurological manifestations. As we navigate the complex landscape of metabolic diseases and their impact on neurological health, it is essential to embrace a paradigm shift towards integrative medicine. By recognizing the interconnectedness of body, mind, and spirit, we can cultivate a holistic approach to wellness that transcends conventional boundaries. Through continued research, clinical innovation, and collaborative efforts, we can pave the way for a healthier future-one where metabolic harmony and neurological vitality converge to enhance the quality of life for individuals worldwide.

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## 15. DATA AVAILABILITY

This is an original manuscript and all data are available for only research purposes from principal investigators.

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