Publisher
Maharshi Charaka Ayurveda
www.maharshicharaka.in

E-ISSN:2456-3110

Journal of Ayurveda and Integrated Medical Sciences

2025 Volume 10 Number 9 September

Case Report
Medovaha Srotas Dushti

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Assessment of Medovaha Srotas Dushti in a case of Obesity with reference to Leptin Resistance and Metabolic Syndrome

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DOI:10.21760/jaims.10.9.43

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Obesity is a chronic, multifactorial metabolic disorder characterized by abnormal or excessive fat accumulation, posing a major risk for various non-communicable diseases including diabetes, hypertension, cardiovascular disorders, and metabolic syndrome. One of the key hormonal disruptions in obesity is leptin resistance, where despite elevated serum leptin levels, the physiological satiety signals are blunted, leading to increased food intake and fat storage. From an Ayurvedic perspective, obesity correlates with Medoroga, which results from the vitiation of Kapha Dosha and Medovaha Srotas Dushti. Impaired Agni, accumulation of Ama, and sedentary lifestyle further aggravate this condition, creating a vicious cycle of Dosha, Dushya, and Srotas dysfunction. This case study presents a comprehensive assessment of Medovaha Srotas Dushti in an individual with clinically diagnosed obesity, supported by modern diagnostic parameters including Body Mass Index (BMI), Waist-Hip Ratio (WHR), lipid profile, fasting insulin, and serum leptin levels. The Ayurvedic examination was conducted using Dashavidha Pariksha, Srotodushti Lakshanas, and Agni-Vyavastha analysis. The patient also exhibited hallmark features of Metabolic Syndrome such as hypertriglyceridemia, central obesity, and insulin resistance, correlating with classical descriptions of Medodhatvagnimandya and Srotorodha. By establishing a link between Medovaha Srotas Dushti and leptin resistance, this study highlights the potential for a more integrated diagnostic and management approach in obesity and metabolic disorders. This case demonstrates that incorporating Ayurvedic concepts into modern frameworks can deepen our understanding of chronic metabolic diseases and guide personalized, holistic treatment strategies.

Keywords: Obesity, Medovaha Srotas, Leptin Resistance, Metabolic Syndrome, Medoroga

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How to Cite this Article

Deepa, Lokesh, Assessment of Medovaha Srotas Dushti in a case of Obesity with reference to Leptin Resistance and Metabolic Syndrome. J Ayu Int Med Sci. 2025;10(9):283-287.
Available From
https://jaims.in/jaims/article/view/4822/

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Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2025-07-13	2025-07-26	2025-08-06	2025-08-16	2025-08-26

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Not required	10.54	

Introduction

Obesity is one of the most prevalent metabolic disorders globally and is recognized as a major risk factor for numerous non-communicable diseases, including type 2 diabetes mellitus, cardiovascular diseases, dyslipidemia, and certain cancers. In 2022, approximately 2.5 billion adults were overweight, of whom nearly 890 million were obese —reflecting a doubling of adult obesity since 1990. **[1]** The World Obesity Federation projects that obesity among adults will more than double from 524 million in 2010 to 1.13 billion by 2030, an increase of over 115%.**[2]** Alarmingly, recent projections suggest that by 2050, more than half of all adults and nearly a third of children globally will be overweight or obese.**[3]** In India, this trend mirrors the global crisis. Nearly 24% of women and 22.9% of men are now overweight or obese, with predictions estimating a rise in adult obesity from 8% in 2023 to over 11% by 2035.**[4]** One recent study projects that by 2050, nearly one-third of India's population - around 218 million men and 231 million women—will fall into the obese category.**[5]** Additionally, one in five Indian households now has all adult members overweight or obese.**[6]** Leptin, a hormone produced by adipocytes, plays a vital role in regulating appetite and energy metabolism. However, in many obese individuals, despite elevated leptin levels, the body exhibits resistance to its effects, leading to persistent hunger, fat accumulation, and insulin resistance.**[7]** This dysfunction is a hallmark of metabolic syndrome, which includes central obesity, hypertriglyceridemia, low HDL, high blood pressure, and impaired glucose tolerance.**[8]** In *Ayurveda,* obesity is described under the condition *Medoroga*, which is caused by the vitiation of *Kapha Dosha* and *Medovaha Srotas Dushti*. The deranged *Agni* (digestive fire), improper transformation of *Rasa Dhatu* into *Meda Dhatu*, and accumulation of *Ama* (toxins) result in excessive fat accumulation and blockage of *Srotas*.**[9]** *Medovaha Srotas* refers to the physiological pathways that govern fat tissue metabolism, and its dysfunction leads to systemic imbalance correlating with modern understanding of metabolic disease.**[10]** By integrating Ayurvedic diagnostic tools such as *Dashavidha Pariksha*, *Agni Pariksha*, and *Srotodushti Lakshana* with modern metabolic markers like serum leptin, lipid profile, fasting insulin, and HOMA-IR, a deeper, personalized understanding of obesity can be achieved.**[11]**

This case study thus explores the role of *Medovaha Srotas Dushti* in a patient with clinical obesity, highlighting the relevance of traditional Ayurvedic principles in the modern context of leptin resistance and metabolic syndrome.

Aim and Objectives

Aim

To assess the involvement of *Medovaha Srotas Dushti* in an individual with clinically diagnosed obesity and to correlate the Ayurvedic pathogenesis with modern metabolic parameters including leptin resistance and features of metabolic syndrome.

Objectives

1. To conduct a detailed Ayurvedic evaluation of a clinically obese patient using *Dashavidha Pariksha*, *Srotodushti Lakshana*, *Agni Bala*, *Vyayama Shakti*, and *Prakriti*

2. To evaluate clinical and biochemical parameters associated with obesity, including Body Mass Index (BMI), Waist-Hip Ratio (WHR), lipid profile, fasting insulin, serum leptin, and HOMA-IR index.

3. To identify features of metabolic syndrome as per International Diabetes Federation (IDF) criteria in the selected case.

4. To assess the degree and type of *Srotodushti* in *Medovaha Srotas* based on classical Ayurvedic texts and correlate it with modern markers of metabolic dysfunction.

5. To explore the interrelation between *Medoroga*, leptin resistance, and metabolic syndrome, emphasizing an integrative approach in diagnosis and understanding of obesity.

6. To highlight relevance of Ayurvedic diagnostic principles in modern context for personalized assessment and potential management strategies in obesity and associated metabolic disorders.

Materials and Methods

Study Design

This is a single case observational study aimed at assessing *Medovaha Srotas Dushti* in a clinically obese individual with reference to leptin resistance and metabolic syndrome. The study was conducted with informed written consent from the participant.

Patient Selection Criteria

Inclusion Criteria

1. Age between 25–45 years
2. BMI ≥ 30 kg/m²
3. Clinical features of obesity & metabolic syndrome
4. Willingness to participate and provide consent

Exclusion Criteria

1. Patients with secondary obesity due to endocrine disorders
2. Pregnant or lactating women
3. Known cases of psychiatric illness or genetic syndromes

Ayurvedic Examination Parameters

- *Dashavidha Pariksha*: Assessment of *Prakriti*, *Vikriti*, *Sara*, *Samhanana*, *Satva*, *Satmya*, *Ahara Shakti*, *Vyayama Shakti*, *Vaya*, and *Desha*
- *Srotodushti Lakshana* (*Medovaha Srotas*): Symptoms such as *Staimitya* (heaviness), *Snigdhata*, *Atisweda*, *Kshudra Shwasa*, and *Atikshudha* were observed and documented
- *Agni Bala*: Assessed as *Mandagni*, *Tikshnagni*, *Vishamagni*, or *Samagni*
- *Vyayama Shakti* and *Nidra* quality were evaluated
- Presence of *Ama* was noted through clinical signs like *Malasanga*, *Mukhavairasya*, & *Jadhyatha*

Modern Clinical Evaluation

- Anthropometric Measurements:
  - Height, weight, BMI
  - Waist circumference (WC), Hip circumference (HC), and Waist-Hip Ratio (WHR)
- Clinical Parameters:
  - Blood Pressure
  - Heart Rate
- Laboratory Investigations:
  - Fasting Blood Sugar (FBS)
  - Fasting Serum Insulin
  - Serum Leptin
  - Lipid Profile (Total Cholesterol, HDL, LDL, Triglycerides)
  - HOMA-IR (Homeostatic Model Assessment for Insulin Resistance)

Diagnostic Criteria for Metabolic Syndrome

The diagnosis of metabolic syndrome was based on standardized international criteria, considering at least three of the following:

- Abdominal obesity (WC ≥ 90 cm in men and ≥ 80 cm in women)
- Elevated triglycerides (≥150 mg/dL)
- Reduced HDL cholesterol (<40 mg/dL in men, <50 mg/dL in women)
- Raised blood pressure (≥130/85 mmHg)
- Fasting glucose (≥100 mg/dL)

Data Collection Tools

- Ayurvedic Clinical Proforma
- Laboratory Reports
- *Srotodushti* Scoring Sheet
- Self-reported lifestyle and dietary questionnaire

Case Report

A 35-year-old female patient presented to the OPD with complaints of excessive body weight gain over the past 6 years, associated with lethargy, excessive sweating, increased appetite, reduced physical endurance, and disturbed sleep. She also reported difficulty in performing routine activities and experienced shortness of breath on mild exertion.

Personal History

- **Dietary Habits:** Predominantly *Guru*, *Snigdha*, and *Madhura Rasa*-dominant diet; frequent intake of fried, oily, and processed foods.
- **Appetite:** Increased (*Atikshudha*)
- **Bowel Habits:** Irregular with tendency toward constipation
- **Sleep:** Disturbed with excessive daytime drowsiness
- **Lifestyle:** Sedentary occupation (desk job); no regular exercise

Family History

- Positive for obesity and type 2 diabetes mellitus (mother and maternal uncle)

Anthropometric Measurements

- **Height:** 156 cm
- **Weight:** 88 kg
- **BMI:**2 kg/m² (Obese – Class II)

- **Waist Circumference:** 98 cm
- **Hip Circumference:** 112 cm
- **Waist-Hip Ratio:**875

Vital Signs

- **Blood Pressure:** 138/90 mmHg
- **Pulse Rate:** 82/min
- **Respiratory Rate:** 20/min

Laboratory Investigations

- **Fasting Blood Sugar:** 106 mg/dL
- **Serum Triglycerides:** 184 mg/dL
- **HDL-C:** 38 mg/dL
- **Fasting Insulin:**5 µIU/mL
- **Serum Leptin:**2 ng/mL (elevated)
- **HOMA-IR:** 64 (indicative of insulin resistance)

Ayurvedic Examination

- ***Prakriti*:** *Kapha-Pittaja*
- ***Agni Bala*:** *Mandagni*
- ***Vyayama Shakti*:** *Alpa*
- ***Satva*:** *Madhyama*
- ***Sara*:** *Mamsa-Sara Alpa*
- ***Medovaha Srotodushti Lakshanas* Present:**
  - *Sthairya*, *Snigdhata*, *Atisweda*, *Kshudra Shwasa*, *Anga Gaurava*
  - Clinical signs of *Ama*: *Mukhavairasya*, *Jadhyatha*, *Malasanga*

Diagnosis

Modern Diagnosis: Obesity (Class II) with Metabolic Syndrome and Leptin Resistance.

Ayurvedic Diagnosis: *Sthoulya* with *Medovaha Srotas Dushti* due to *Kapha-Medo Dushti*, *Mandagni*, and *Ama.*

Observations

The patient presented with clinical obesity (BMI – 36.2 kg/m²), central adiposity (waist circumference – 98 cm), and fulfilled the diagnostic criteria for metabolic syndrome as per the IDF guidelines. Biochemical investigations revealed:

- Elevated fasting insulin (21.5 µIU/mL)
- Increased serum leptin (38.2 ng/mL)
- Low HDL (38 mg/dL)
- Elevated triglycerides (184 mg/dL)
- HOMA-IR score of 5.64 indicating significant insulin resistance

Ayurvedic assessment showed:

- *Kapha-Pittaja Prakriti*
- Presence of *Mandagni*, *Ama*, and *Alpa Vyayama Shakti*
- Classical *Medovaha Srotodushti Lakshanas*: *Snigdhata*, *Atisweda*, *Kshudra Shwasa*, *Anga Gaurava*, and *Staimitya*

These findings confirm the correlation between Ayurvedic diagnosis (*Medovaha Srotas Dushti*) and modern pathological concepts like leptin resistance and metabolic syndrome.

Discussion

In Ayurveda, *Medoroga* or *Sthoulya* is a result of imbalance in *Kapha Dosha*, *Medo Dhatu*, and *Medovaha Srotas*. The obstruction of *Srotas* by *Ama* and excess *Kapha* leads to *Agnimandya*, which further deranges metabolic homeostasis. This is supported by the presence of *Mandagni*, reduced digestive power, increased hunger (*Atikshudha*), and accumulation of metabolic waste. Leptin, known for regulating satiety and energy expenditure, becomes ineffective in obesity due to receptor insensitivity - paralleling the Ayurvedic concept of *Agni Dushti* and ineffective signaling in *Dhatu Poshana Kriya*. Despite high leptin levels, the hypothalamus fails to respond, leading to continued weight gain, mirroring the *Ama-Avarana* (metabolic blockage) phenomenon. Metabolic syndrome, a cluster of cardiovascular risk factors, reflects the multi-systemic nature of *Srotodushti*. Elevated triglycerides and insulin resistance suggest derangement in *Rasa*, *Meda*, and *Majja Dhatus*, indicating a deeper *Dosha-Dushya Sammurchhana*. Obstruction in *Medovaha Srotas* impairs normal lipid transport and utilization, analogous to modern findings of lipotoxicity and dyslipidemia. Thus, this case highlights how the Ayurvedic framework of *Srotas*, *Agni*, and *Dosha* can effectively explain complex metabolic disorders. The correlation of *Medovaha Srotas Dushti* with leptin resistance offers a bridge between traditional wisdom and modern endocrinology, creating scope for integrative diagnosis and management of obesity.

Conclusion

This case study illustrates the diagnostic and conceptual relevance of *Medovaha Srotas Dushti* in the pathogenesis of obesity, particularly when viewed alongside modern parameters such as leptin resistance and metabolic syndrome. The clinical picture of the patient - marked by obesity, central adiposity, insulin resistance, dyslipidemia, and elevated serum leptin - aligns closely with the Ayurvedic features of *Sthoulya*, *Agnimandya*, *Ama Nirmiti*, and *Kapha-Medo Dushti*. The Ayurvedic perspective of *Medoroga* emphasizes the importance of *Agni*, *Ahara*, and *Vihara* in the genesis of metabolic imbalance. *Srotodushti* in the *Medovaha Srotas* impairs lipid metabolism and disrupts *Dhatu Poshana*, much like how leptin resistance disturbs energy regulation in modern physiology. This case reinforces the concept that obesity is not merely an accumulation of fat but a systemic disorder involving digestive fire, tissue metabolism, and subtle channels of transport (*Srotas*). By establishing a correlation between classical Ayurvedic parameters and modern biomarkers, the study underscores the importance of a holistic, multidimensional diagnostic approach in lifestyle disorders like obesity. The findings also support the relevance of personalized Ayurvedic assessment in identifying underlying imbalances and potential therapeutic targets. Such integrative case assessments can pave the way for novel interventions where Ayurvedic diagnosis guides individualized treatment, even as modern tools monitor progress objectively. This not only validates ancient knowledge systems but also enhances their applicability in managing global health challenges like obesity and metabolic syndrome.

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