

THE METABOLIC SPECTRUM: A CRITICAL REVIEW OF STHOULYA AND KARSHYA IN THE FRAMEWORK OF ASHTAUNINDITIYA VS. MODERN BMI PHENOTYPES

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Abstract- The concept of body constitution and its pathological deviations is fundamental to both Ayurveda and modern biomedical science. In Ayurveda, *Sthoulya* (obesity) and *Karshya* (emaciation), classified under *Ashtaunnditiya Purusha*, reflect clinically significant states arising from defects in *Dhatuposhana* (tissue nourishment). *Acharya Charaka* has described *ashtaunnditiya purusha* under the *yojna chatushaka*. *Sthoulya* involves excessive *Medodhatu* accumulation due to impaired *Agni* and *Srotorodha*, whereas *Karshya* results from inadequate tissue nutrition and *Dhatu* depletion. In the contemporary landscape of metabolic health, Body Mass Index (BMI) remains the gold standard for clinical classification. However, its inability to account for body composition and metabolic diversity has led to the identification of "metabolic phenotypes" (e.g., TOFI—Thin Outside, Fat Inside). This paper explores the ancient Ayurvedic concept of *Ashtaunnditiya* (Eight Despicable Conditions), with a focus on the polarities of *Sthoulya* (Obesity) and *Karshya* (Emaciation). By comparing Ayurvedic pathophysiology (*Samprapti*) with modern endocrinology, this review aims to bridge the gap between traditional body constitutional assessment and modern metabolic profiling.

Key word- *Ashtaunnditiya Purusha*, *Sthoulya*, *Karshya*, Modern BMI Phenotype.

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INTRODUCTION

Ayurveda is considered one of the oldest traditional systems of medicine accepted worldwide. It is a science of life with a holistic approach to health and personalized medicine. The ultimate goal of Ayurveda is to attain good health "swasthysya swasthyarakshanamaturasyavikarprashmanam ch"^[1] by maintaining the physical and mental health along with social as well as spiritual well-being of an individual. Ayurveda always guides a man to keep the body and mind in a healthy state by preventing disease. In the *Charaka Samhita*, the *Acharya* has described the characteristics of the *Prashasta Purusha* (the ideal person). Such a person, having proportionate musculature and compactness of the body, no doubt possesses very strong sensory and motor organs, and as such, they are not overcome by the onslaught of diseases.^[2] They can stand hunger, thirst, the heat of the sun, cold, and physical exercise. The process of digestion and assimilation takes place properly in their body^[3]. In *Charaka Samhita*, *Acharya Charaka* also describes the *Ashtaunnditiya Purusha*—eight types of physiques.^[4]

1. *Atisthula*:- over-nourishment leading to the accumulation of *Meda* (fat).

2. *Atikrisha*: - deficient nourishment and tissue depletion.

3 *Ati Deergha*: - Gigantism, or excessive height.

4. *Ati Hrisva*:- dwarfism, or excessive shortness.

5. *Ati Loma*: - excessive body hair (Hirsutism).

6. *Aloma*:- Alopecia, or excessive hair loss/absence of hair

7. *Ati Krushna*:- Exceptionally dark skin tone.

8. *Ati Gaura*:- Exceptionally fair (Albinism)

At the extremes of this spectrum lie *Atisthaulya* (Extreme Obesity) and *Atikarshya* (Extreme Emaciation). These are socially and medically criticized due to their inherent vulnerability to disease.

These conditions are not merely cosmetic but represent systemic metabolic imbalances involving *Dosha*, *Dhatu*, and *Agni*. Ayurveda considers both extremes harmful, although *Karshya* is sometimes considered relatively less severe than *Sthoulya* due to a lower risk of obstruction-related diseases.^[5] There are eight distinct human anomalies known as *Nindita Purusha*, which are physical malformations with an odd look that are typically difficult to treat or cannot be treated at all. Among the above-mentioned undesirable persons, *Atisthula* and *Atikrisha purusha* are more commonly found. Ayurveda further stated that *Atisthula* and *Atikrisha* persons are more despised among all eight despised

persons. These two people are more prone to getting any kind of disease easily,^[6] therefore, they are described in detail. According to *Acharya Charaka*, people who are *Atisthula* are more liable to be at a health risk than *Atikrisha*. It is observed that an *Atisthula* person cannot tolerate any type of physical exercise, over-saturation, hunger, thirst, diseases, or drugs.^[7] This *Medoroga* is categorized under diseases that are caused by over-saturation, i.e., under *Santarpanajayna Rogas*.^[8]

In *Sutra Sthana*, *Acharya Charaka* mentioned *Atisthaulya* as a *Kapha Nanatmaja roga*, which indicates predominance of *Kapha dosha* in the generation of disease.^[9] *Acharya* also mentioned *Atisthaulya* in *Santarpaniyadhyaya* of *Sutra Sthana*. *Atisthaulya* is said to be “*Atibrihan janyavyadhi*,” i.e., disease caused by excessive *brihan* therapy ^[10]. *Acharya* also mentioned *Atisthaulya* as a “*Dushtimedojvyadhi*,” which means disease caused by vitiation of *Medodhatu*.^[11]

While modern medicine uses the Body Mass Index (BMI) as a primary diagnostic tool, it often fails to capture the metabolic health of an individual.^[12] Ayurveda, conversely, focuses on *Dhatu Samya* (homeostasis of tissues) and *Agni* (metabolic fire), offering a more nuanced view of the "metabolic spectrum" that predates modern phenotyping.

2. Pathophysiology: *Sthoulya* vs. Modern Obesity

Ayurvedic view:- *Sthoulya* develops due to *hetusevana* like *kaphakara madhura ahara*, *avyayama*, *divaswapna*, which aggravate *Kapha* and cause *vikruta medo vrudhhi* (increase of *Meda dhatu*).

This leads to *srotorodha* (obstruction of channels), resulting in vitiated *Vata* undergoing *vimargagamana* and becoming *koshtashrita*. *Vata* then increases *Agni bala*, causing rapid digestion and increased appetite. Excess food intake further produces abnormal *Meda*, ultimately leading to *Sthoulya*.^[13] Excessive accumulation of *Meda* blocks the *Srotas(channels)*, preventing nourishment from reaching other tissues. This leads to a paradoxical state where the individual is "over-nourished" in fat but "malnourished" in vital tissues like bone (*Asthi*) and muscle (*Mamsa*). *Vayu*, due to the passage having been obstructed with fat, moves about abundantly in the belly and thus stimulates digestion and absorbs food. Hence, the person digests food quickly and desires the intake of food excessively. The fat getting digested in the alimentary tract and causing obstruction in the channels of the *Rasa*, hinders it from going to the other *dhatu*s, and makes for an increase of *Meda dhatu* (fat) only.^[14] The remaining portion of *Rasa dhatu*, being very little in quantity, is not enough to

nourish the *Rasa* and other *Dhatu*s. This increase (of fat) is similar to the increase of *Vata* and others, that which has undergone increase first will only undergo further increase” (but others which have not increased first). On this analogy, there will be a disparity between *Medas* and other *Dhatu*s.

Modern Correlation:

Obesity is characterized by excessive accumulation of adipose tissue resulting from hypertrophy (increase in size) and/or hyperplasia (increase in number) of adipocytes. According to the general principle that increased functional demand stimulates cellular enlargement and proliferation, gross obesity in humans is associated with an increase in the size and number of adipose cells due to factors such as age, sex, genetic predisposition, endocrine imbalance, behavioural and psychological influences, or iatrogenic causes. After weight reduction, adipocytes decrease in size, but the increased number of cells usually remains permanent. Although it is difficult to draw a clear line between physiological and pathological fat accumulation, gross obesity is undoubtedly harmful and should be regarded as a pathological condition. Adult-onset obesity is mainly characterized by adipocyte hypertrophy with minimal hyperplasia. In addition to enlargement of normal fat depots such as subcutaneous tissue, omentum, and retroperitoneal tissue, adipose tissue in obesity may also accumulate in sites where it is normally absent.^[15]

There are three main factors in the pathogenesis of obesity:

- 1) Excessive lipid deposition
- 2) Diminished lipid mobilization and
- 3) Diminished lipid utilization

CLINICAL COMPARISON-

Parameter	<i>Sthoulya</i>	Modern obesity
Features	Excess- <i>Meda</i> <i>Dhatu</i> , <i>Shaithilyta</i> , <i>Ayusho</i> <i>hrasa</i> .	Increases body fat (especially central), high BMI, fatigue, and reduced mobility.
Primary driver	<i>Kapha</i> aggravation → <i>Mandagni</i> → Causes <i>Medo Vrudhi Ama</i> <i>formation</i> → <i>Srotorodha</i>	Chronic energy surplus + insulin resistance.
Tissue quality	<i>Meda</i> is <i>Saama</i> (associated with	Hypertrophic and

	<i>aama</i>), loose, unctuous, poorly nourished, and other <i>Dhatus</i> . (<i>tasya hyaatimmatramedas vino meda evaupchiyate n tathetare dhatvaha</i>)	hyperplastic adipose tissue, inflamed, dysfunction al fat cells.
Risk factor	<i>Guru, madhura, snigdha, shita ahara, avyayama, avyavaya, divaswapna, harshanitya, achintana, beeja swabhava.</i>	High caloric diet, sedentary lifestyle, stress, poor sleep, and genetic predisposition.
Pathological process	<i>Agni dushti</i> , <i>ama</i> , <i>medovaha srotas</i> blockage <i>improper nourishment meda dhatu</i> accumulation.	Energy imbalance-adipocyte expansion, inflammation, metabolic syndrome
Distribution of fat	generalized with <i>Sphiga, Udara, and Stana Pradesha.</i>	Central (visceral fat) is more dangerous than subcutaneous fat.
Systemic effect	Reduced efficiency of other <i>dhatu</i> s, decreased vitality (<i>oja kshya</i> tendency)	Multi-system involvement : - endocrine, cardiovascular, metabolic dysfunction.
Disease nature	<i>Santarpanjnyavyadhi</i>	Chronic metabolic disease.

3. Pathophysiology: *Karshya* vs. Lean Phenotypes-

Atikarshya is characterized by a deficiency in *Meda* and *Mamsa*, often driven by a hyperactive *Agni* (metabolism) or *Vata* dominance. *Karshya* develops due to *Nidana sevana*, where a person consumes food in very small quantities and lacks proper nutrition (without *Shad rasa*), along with a *Vata*-aggravating diet and lifestyle. [16] This leads to vitiation of *Vata dosha*, causing depletion and dryness of *Rasa dhatu*. Due to *Mandagni*, *Ama* is formed, which results in *srotorodha* (obstruction of channels). Consequently, the *Rasa dhatu* becomes

scanty and dry and fails to properly nourish all body tissues, leading to overall tissue depletion and *Karshya*.

The TOFI Phenomenon: * Modern medicine identifies "Thin-on-the-outside, Fat-on-the-inside" individuals who have a low BMI but high visceral fat. [17] Ayurveda classifies such individuals as having *Vata-Pitta* imbalances, in which the *Dhatu* quality is poor despite a "lean" appearance.

CLINICAL COMPARISON-

4. The Framework of *Ashtauninditiya*:-

The *Ashtauninditiya* chapter provides a holistic "Metabolic Risk Score." It suggests that both the obese and the emaciated suffer from a shortened lifespan and reduced physical capability, but for different reasons:

1. ***Atisthula***:-As per *Amarkosha*, *sthula* is a condition as a result of excessive nourishment.

A person, due to the extensive growth of fat and flesh, is unable to do work and is disfigured with pendulous buttocks, belly, and breasts, is called *Atisthula*, and the condition is termed as *Atisthaulya*. [18]

Suffers from *Ayuso-hrasa* (reduced longevity) due to *Meda-avrita-vayu* (obstructed *Vata* leading to increased hunger and metabolic exhaustion), hampered movement, difficulty in sexual intercourse, debility or general weakness, foul smell of body, over sweating, increased thirst. [19]

2. ***Atikrusha***:- ***KARSHYA- "KRUSHASYA BHAVHA KARSHYA."***

According to this, *Karshya* means a person who is lean and emaciated.

- *Acharya Charka* said this disease is a *Rasapradoshaja vikara* [20] and *Aptarpanjnya vikara*. [21]
- A disease in which the body of a person becomes emaciated, lean, and thin due to a deficiency of *Rasa dhatu*, which causes further a status of *Mansahinata* or *mansa kshaya*, is known as *Karshya*.
- Suffers from *Alpa-bala* (low strength) and susceptibility to *Vata* disorders like tremors and respiratory issues. In *Charaka Samhita*, *bahushosha* is included under *Vata Nanatmaja vatavyadhi*. [22]
- Both obesity and emaciation depend on *Rasa Dhatu*. [23]

3. ***Ati Deergha***:- Just as the name suggests, *Ati Deergha* is a disorder in which the body is

overgrown as compared to the normal dimensions of the body.

In this over- growth, the main reason is considered as *Vata*, since for growth and movement purposes in the body, *Vata* is held responsible, thus such a person is also called "*Vatal Pursha*".

It can be correlated with Gigantism in the modern era. The term " gigantism " is derived from "giant," meaning huge or abnormally large, and the suffix "-ism," meaning condition. It is a rare disorder characterized by excessive growth and abnormal increase in height due to hypersecretion of growth hormone during childhood, before the fusion of the epiphyseal plates.

4. *Ati Hrisya*: - As the name suggests, the person suffering from this disorder has short body proportions as compared to normal.

- This also does not have any treatment and is socially unacceptable.
- Any work that needs strength, these people will not be able to perform it.
- Due to small body proportions, these people will also not be able to consume and tolerate the *Teekshna virya aushadha*.
- Their mental and physical growth may be hindered.
- May suffer from *Manda-Agni*.

It can be correlated with dwarfism. The word Dwarfism is derived from:

- "**Dweorg**" / "**Dweorh**" — an Old English word meaning *a person of unusually small stature*
- "**-ism**" — a suffix meaning *condition or state*

Thus, "dwarfism" literally means the condition of being unusually small in stature.

5. *Ati Loma*: - As the name implies, an individual with *Ati-Loma* has more body hair (*lomas*) than usual. This excess can take many different forms, such as being thicker than usual or having several *lomas* from a single *loma-koop*. According to the *Skanda Purana*, the normal number of *loma* (body hairs) is described as three and a half crores; a number exceeding this is termed *Atiloma*.

Twenty-nine thousand and nine hundred and fifty-six- this is the measure of minute divisions of the veins and arteries when subdivided into extremely fine channels, and their tips are said to be of the same number as the hairs of the head, beard, and body. [24]

The complications faced by a person suffering from this disorder are as follows-

Since *loma koop* are the minute openings on skin that become the passage for the *Mala "sweda"* or sweat so that it can escape the body, now in case of *Ati-loma*, the sweat that releases cannot dry off properly and becomes sticky, and thus can lead to skin disorders or bad smell, etc.

If more than one *loma* comes from a *lomakoop*, then in such a condition, the *lomakoop* will be blocked, and being blocked, it will not be able to perform its normal function of letting out sweat from the body.

***Atiloma* is correlated with hypertrichosis or werewolf syndrome.**

Hypertrichosis: - It is defined as excessive hair growth anywhere on the body in either males or females. It is important to distinguish hypertrichosis from hirsutism, which is a term reserved for females who grow an excessive amount of terminal hair in androgen-dependent sites.[25]

6. *Aloma*:- *Aloma* as the name suggests, this is a condition where body is devoid of hair follicles throughout the body, in this condition the due to less amount of *loma* on body, which results in blockages/presence of low amount of outlets for *Sweda*, thus creating a complication as this means that due to reduced amount of *loma-koop* the *sweda* and thus the *mala-bhaga* that excretes out of body through this pathway is not able to excrete properly that can lead to various complication in body.

Other than that, these *loma* are responsible for the perception of temperature on the body or any other sudden touch, thus reducing the sensing ability of *Sparshendriya* as it is also a part of *Twacha (aashraya of Sparshendriya)*.

In modern medical science, it can be correlated with Alopecia universalis.

This disorder is believed to be of an autoimmune nature and may have a genital origin as well.

7. *Ati Krushna*: - As the name suggests very clearly, person suffering from this disorder basically has a very dark complexion of skin (*krushna varni*) and basically in society the fair complexions are defined are beautiful while the darker complexions are marked as the opposite and thus this disorder does not have any other consequences when seen from a medical point of view but such a person has to face many degrading remarks etc on the social basis and since this complexion is not socially acceptable this comes under the category of *Ashta-nindita*.

In modern it is described as the higher amount of melanin pigmentation in the body leads to a darker complexion.

8. **Ati Gaura:** - *Ati-gaur*, as the name suggests, when a person has this condition, the person's skin is of an unnaturally white complexion. In Modern it is correlated with Albinism. It is a congenital disorder characterized by the complete or partial absence of melanin pigment in the skin, hair, and eyes.

Acharya Susruta describes the formation of Garbha varna from the combination of different panchmahabhuta.^[26]

- *Tejo mahabhuta + prithvi mahabhuta = Krishna varna*
- *Tejo mahabhuta + ap mahabhuta = Gaura varna*
- *Tejo mahabhuta + prithvi mahabhuta + akasha mahabhuta = Krishna Shyava*
- *Tejo mahabhuta + jala mahabhuta + akash mahabhuta = Gaur shyava*
- So, any change in this permutation and combination of *Mahabhuta* can cause changes in *Garbha varna*, which shows the formation of congenital, inherited, and hormonal pigmentation disorders.

CHIKITSA SIDDHANTA –

- The over obese and the over-lean are constantly indisposed and as such have to be managed constantly with bulk-reducing and bulk-promoting measures respectively.
- A heavy and non-nourishing diet is prescribed for slimming in the case of the over corpulent.
- Light and nourishing diet for the nourishment of the slim.
- Obesity and leanness are particularly caused by sleep and diet.
- By the absence of worry, feeling of happiness, nourishing food and drinks, excessive sleep causes the emaciated to become stout like a pig.

Karshya is better than *Sthaulya*, and its reason.^[27]

Karshya is better than *Sthoulya* because there is no effective treatment of obese, neither fattening therapy nor thinning therapy is sufficient to control excessive fat accumulation, mitigation of *Agni* and *Vata*, while the use of *Madhura* and unctuous foods and other comforts cures emaciation easily, obesity will not be so easily cured by the use of opposites.

5. Comparative Analysis:

BMI vs. Ayurvedic Assessment Modern medicine is shifting from "Weight-Centric" to "Health-Centric" models. The limitation of BMI is its inability to distinguish between muscle and fat. Ayurveda uses

Pramana Pariksha (anthropometric measurements) and *Sara Pariksha* (tissue quality assessment). A person with a high BMI but high *Mamsa Sara* (excellent muscle quality) would not be classified as *Sthaulya* in Ayurveda, whereas modern BMI would label them "Obese."

6. Conclusion

The *Ashtauninditiya* framework provides a sophisticated precursor to modern metabolic phenotyping. By integrating the Ayurvedic focus on *Agni* and *Srotas* with modern lipid profiling and BMI, clinicians can achieve a more personalized approach to metabolic health.

Future research should focus on validating *Sara Pariksha* (tissue quality) as a clinical tool to supplement BMI, particularly in identifying metabolically obese, normal-weight (MONW) individuals.

REFERENCES

1. Charka Samhita: Savimarsha Hindi Commentary by Kashinath Pandey and Gorakhnath Chaturvedi Sutra sthana 30/26 volume 1, edition reprint 2020, Chaukhambha Bharti Academy, Varanasi.
2. Charaka Samhita of Agnivesha, Commentary by Chakrapani dutta Sutra sthana 21/18 edited by Lakshmidhar Dwivedi, Volume 1, Edition 2013, Chaukhambha krushna das Academy, Varanasi.
3. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 21/19 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
4. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 21/3 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
5. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta, Sutra sthana 21/17 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.

6. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 21/4 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
7. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
8. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta, Sutra sthana 23/6, edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
9. Charaka Samhita text with English translation by Prof. Priyavrata Sharma, Sutra sthana 20/17 volume 1, edition reprint 2017, Chaukhambha Orientalia Varanasi.
10. Ashtanga Hrudya of Srimadvagbhatta edited with Nirmala Hindi Commentary by dr. Brahmanand Tripathi Sutra sthana 14/19 volume 1, edition reprint 2019 Chaukhambha Sanskrit Pratishtana Delhi.
11. Charaka Samhita text with English translation by Prof. Priyavrata Sharma, Sutra sthana 28/15 volume 1, edition reprint 2017, Chaukhambha Orientalia Varanasi.
12. World Health Organization (WHO). Fact Sheets: Obesity and Overweight.
13. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 21/4 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
14. Ashtanga Samgraha text with English translation by Prof. K.R. Shrikantha Murthy Sutra sthana 24/23-24 volume 2, edition 2005, Chaukhambha Orientalia Varanasi.
15. Harrison's- Principles of internal medicine, Braunwald, Kasper et al. 17th edition, New York- McGraw-Hill 2008.
16. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta, Sutra sthana 21/10-11-12 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha Krushna Das Academy, Varanasi.
17. Sefan, N, et al. 2017. Metabolic phenotypes: beyond BMI, the latent diabetes and endocrinology.
18. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta, Sutra sthana 21/9 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
19. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 21/4 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
20. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 28/10 edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi
21. Ashtanga Hrudya of Srimadvagbhatta edited with Nirmala Hindi commentary by dr. Brahmanand Tripathi Sutra Sthana 14/8 volume 1, edition reprint 2019, Chaukhambha Sanskrit Pratishtana, Delhi.
22. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sutra sthana 20/11, edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi
23. Susruta Samhita of Maharshi Susruta edited with Ayurveda Tatva dipika Hindi commentary by Kaviraja Ambikadutta Shastri

- sutra sthana, 15/37, Chaukhambha Sanskrita Sansthana Varanasi.
24. Charaka Samhita of Agnivesha, commentary by Chakrapani dutta Sharira sthana 7/14, edited by Lakshmidhar Dwivedi, volume 1, edition 2013, Chaukhambha krushna das Academy, Varanasi.
 25. Neena Khanna- Illustrated synopsis of dermatology and sexually transmitted disease, 2nd edition, chapter 7, first published 2008.
 26. Susruta Samhita of Maharshi Susruta edited with Ayurveda Tatva Dipika Hindi commentary by Kaviraja Ambikadutta Shastri, Sharira sthana, 2/37, Chaukhambha Sanskrita Sansthana Varanasi.
 27. Ashtanga Samgraha text with English translation by Prof. K.R. Shrikantha Murthy Sutra Sthana 24/45-46 volume 2, edition 2005, Chaukhambha Orientalia Varanasi.

Parameter	<i>Karshya</i>	Lean phenotype
Features	<i>Sphiga</i> , <i>Udara</i> , and <i>Griva</i> have dried up. Joints of bones have become prominent, and the body is full of (a network of) veins.	Normal or low BMI appearance but metabolically unhealthy (thin outside, fat inside)
Primary driver	High <i>vata</i> , high <i>agni</i>	Genetic, high basal metabolic rate
Tissue quality	Poor <i>oja</i> (immunity)	Low muscle mass (sarcopenia)
Risk factor	<i>Vata</i> disorders, fractures	Metabolic lean syndrome, type 2 diabetes in lean BMI.
pathogenesis	<i>Nidana sevana</i> → (<i>vatavardhaka Ahara</i> and <i>Vihara</i>) → vitiation of <i>Vata dosha</i> , → <i>Agni Mandhya</i> , → <i>Ama</i> formation, <i>Rasa dhatu kshya</i> → <i>Srotorodha</i> → inadequate nourishment of all <i>dhatu</i> s → <i>karshya</i>	Normal BMI-adipose tissue dysfunction, insulin resistance, metabolic dysregulation.
Metabolic state	<i>Agni</i> becomes weak, leading to poor digestion, absorption, and assimilation of nutrients.	Metabolically unhealthy state despite normal weight (insulin resistance, dyslipidaemia).
Systemic effect	Generalised weakness and fatigue Dryness of skin, hair, and body.	Silent metabolic damage affects the liver, pancreas, and cardiovascular system.
Disease nature	<i>Aptarpanjanya vyadhi</i>	May be physiological (naturally lean) or pathological malnutrition