



ISSN 2456-3110

Vol 3 · Issue 5

Sep-Oct 2018

Journal of
**Ayurveda and Integrated
Medical Sciences**

www.jaims.in

JAIMS



Charaka
Publications

Indexed

Metabolic Syndrome and the Management : An appraisal with Siddha System of Medicine

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ABSTRACT

Visceral obesity syndrome also known as metabolic syndrome X is the bunch of medical conditions characterised by hypertension, hyperglycaemia, dyslipidemia and atherosclerotic cardiovascular disease affecting, nearly 240 million people worldwide. In India nearly 10000 people were affected per year and overall it goes on escalating steadily due to amplified adulterated human behaviours. There is a need of exigency at this juncture by knowing its complex pathology to condense human anguish and financial load. Siddha system of medicine primarily describes as it may arise due to provocation of the humours of the body. When our moral code of demeanour is deprived including intemperance and deficit physical activity, there is a flawed tissue metabolism leading to metabolic syndrome (MS). Classical books of Siddha were used for literary survey and databases were also analysed with the prime terminology "Metabolic syndrome" for this systemic review. The speculative backdrop, broad set of strategy in aetiology, pathogenesis and management of MS are discussed at extent through Siddha system, in the paper which would be creditable in managing in an effectual and gainful approach.

Key words: Metabolic syndrome (MS), Pac iyya noi, Noi varum vazhi, Maruthuva muraigal, Siddha.

INTRODUCTION

Metabolic syndrome (MS or MetS) (Also known as syndrome X, insulin resistance syndrome or dysmetabolic syndrome) is a cluster of metabolic risk factors, which insulin resistance, hypertension, cholesterol abnormalities, and an increased risk for blood clotting that come together in a single individual. Affected individuals are most often overweight or obese^[1] and, are strongly associated with an increased risk of developing atherosclerotic cardiovascular disease (CVD).^[2]

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Submission Date : 16/09/2018 Accepted Date: 21/10/2018

Access this article online

Quick Response Code



Website: www.jaims.in

DOI: 10.21760/jaims.v3i5.13825

Worldwide prevalence of MetS ranges from <10% to as much as 84%, depending on the region, urban-rural environment, composition (sex, age, race, and ethnicity) of the patient, and the definition used. The prevalence of MetS in India has been documented to be from 11% to 41% across this vast country with numerous socio-cultural varieties.^[3] Chow *et.al.* found a prevalence of MS of 26.9% in males and 18.4% in females in southern India. The prevalence of MS based on ATP III criteria in Jaipur (urban north Indian population) was 24.9%. The prevalence of MS did not change with respect to age difference; 20 to 40 and 41 to 60 age groups showed similar prevalence of MS, and a marginal decrease was seen in more than 60 age groups.^[4]

Based on the guidelines from the National Heart, Lung, and Blood Institute (NHLBI) and the American Heart Association (AHA), any three of the following traits in the same individual meet the criteria for the metabolic syndrome;^[1]

1. Abdominal obesity: a waist circumference of 102 cm (40 inches) or more in men and 88 cm (35 inches) or more in women. For Asian Americans,

the cut off values are ≥ 90 cm (35 inches) in men or ≥ 80 cm (32 inches) in women

2. Serum triglycerides 150 mg/dl or above.
3. High-density lipoproteins (HDL) cholesterol 40mg/dl or lower in men and 50mg/dl or lower in women.
4. Blood pressure of 130/85 or more.
5. Fasting blood glucose of 100 mg/dl or above.

Metabolic syndrome is present in about 5% of people with normal body weight, 22% of those who are overweight and 60% of those considered obese. Adults who continuously gain five or more pounds per year, raise their risk of developing MS by up to 45%. Genetic factors (family history that includes type 2 diabetes, hypertension and early heart disease), aging, environmental issues such as low activity level, sedentary lifestyle, and progressive weight gain, obesity, diet (particularly sugar-sweetened beverage consumption), disrupted chronobiology/sleep, mood disorders/psychotropic medication use, excessive alcohol use, post-menopausal women and smoking contribute significantly to the risk of developing the MS.^{[5][6]} The objective of the study was to evaluate and comprehend the MS in Siddha perspective. In addition, analyse the possible pathogenesis (*Noi varum vazhi*) and to review the management of MS in Siddha outlook.

METHOD

Classical books of Siddha were used for literary survey. In addition, PubMed and Google Scholar databases were also analysed with the prime terminology "Metabolic syndrome" for the systemic review.

Siddha notion towards MS

The basic conception of Siddha is that, the human body is made up of three physical constituents as *Vaatham*, *Pitham* and *Kapham* (*uyir thathukkal*) formed by the combination of the five basic elements. The physiological functions in the body is mediated by the three substances (*Dravyas* - *Vaatham*, *Pitham* and *Kapham*), which are involved in all functions of the

body as physical, emotional and mental.^[7] They circulate in different proportions and help in the digestion of foods and makes up the general body.^[8] The three elements - *Vaatham*, *Pitham* and *Kapham* also constitutes the entire environment (which includes foods, medicines from natural source etc). Their omnipresence is solely responsible for the diseases invasion as well as restoration.

The Siddha literature *Yugi Vaithiya Chinthamani* describes the MS as *Paci iyya noi* or *Tipana iyya noi*, which is characterised by increased hunger and ingestion of over nutritious food leading to defective of metabolism. It causes congested chest followed by excruciating chest pain and general debility leading to systemic diseases and affecting the whole body.^[9] This type of disorder happens due to inappropriate food ethics. When taken the food the *Udal Thee* well-known as *Sama Agni* - a corporal energy endowed in the body helps in the mechanical and chemical break down of the food by imparting intrinsic enzymes and hormones. The action involves with *Samana Vaatham*, *Analaga Pitham* and *Kledhaga Kapham*.^{[8][10]}

Etio pathogenesis (*Noi varum vazhi*) of MS according to Siddha system

Improper dietary principles; food craving and heavy food consumption may tremendously aggravate *Kapham* and persuades *Manthagani* (sluggish digestive fire). It leads to indigestion, gastro intestinal rumble, bulky and sluggish digestion and disrupt the effective functioning of the gastro intestinal tract and produces *Aamam* or endotoxins. The *Aamam* gets accumulated in the micro circulation channels (*Surotas* or *kālvāyaka!*) of all seven basic tissues (*Saaram*, *Senneer*, *Oon*, *Kozhuppu*, *Enbu*, *Moolai* and *Sukkilam / Suronitham*). In which, *Aamam* most actively acts with *Kozhuppu Thathu* (*Mētas* or adipose tissue) and cause fraction of lipids with fatty acids, triglycerides and cholesterol to form anomalous adipose tissue in MS, that causing atherosclerotic changes.

In the *Vaatham* - *Abana Vaatham* is responsible for the deposition and sacking of food juices (*Saaram* or plasma) in *Amarvasayam* (visceral cavity of stomach). The *Viyanaa Vaatham* regulates the circulation and

distribution of *Saaram*. The *Udhana Vaatham* provokes from the *Udharagni* of the lower abdomen combines with *Saaram* blend, ceases, furnish within the body. The *Samana Vaatham* at *Pagirvasayam* (visceral cavity of small intestine) responsible for stabilizing other *Vaatha* types, absorption of nutrients from food stuffs, circulates and settles evenly in the body. The *Kirukara Vaatham* is responsible for salivary secretions and ravenous. *Analaga Pitham* helps in digestion by breaking and desiccates the food stuffs. *Pitham* may get aggravate from the site due to the intake of half cooked food and produce *Vesamagni* which has sharp (*Koormai*) property leads to delayed or rapid gastric emptying, hyperacidity, higher burning of calories and disintegration of *Saaram*. In *Kapham - Kledhaga Kapham* moistens the food and *Avalambaga Kapham* give basic integrity to heart through *Saaram* in food. Those depicted functions become poor in MS.^{[7][8][10]}

The precipitation of *Aamam* or *Seetham* (metabolic toxins) in all *Kālvāykal* of basic tissues along with disrupted *Vaatham*, *Pitham* and *Kapham* as described above leads to increase of pro- inflammatory signals, insulin resistance and release free fatty acids.

Hence all the metabolic functions get scrambled in MS due to vitiation of *Kapham* consequential to atherosclerotic cardiovascular disease. The first basic tissue plasma affected initially and eventually all other *Udal Thathukkal* (body basic tissues) namely blood, muscle, adipose tissue, bone, bone marrow, male or female hormones and reproductive tissue gets distorted.^[10] There after the associated conditions such as hyper uricemia, fatty liver (especially in concurrent obesity) progressing to non alcoholic fatty liver disease, polycystic ovarian syndrome (in women), erectile dysfunction (in men) and acanthosis nigricans occurs.^[6]

Thus, the physical sheath (*Annamaya Kosam*) which is constructed from seven basic tissues^[10] gets contrived in MS.

Remedies for MS through Siddha (*Maruthuva Muraigal*)

Elimination of *Aamam* or endotoxins by *Viresanam* (purgation therapy) and *Vamanam* (emetic therapy)

normalise the vitiated *Kapham*.^[10] But procedures should be done with prior precautions and guidelines of Siddha system.

Food concept (*Unavu Muraigal*)

High calorie intake, over eating and alcohol use^[11-13] is the chief reason of MS. As they lead to release of large amount of free fatty acids as well as provokes pro-inflammatory signals causing insulin resistance and flawed metabolism. Thus food with *Tinmai* (heavy), *Kozhumai* (oily or unctuous), *Neippu* (semisolid), *Mantam* (dull, slow), *Parumai* (gross), *Vanmai* (hard), *Irukai* (solid or dense) and *Nilaital* (static) properties tends to cause MS. Hence *Noymai* (lightness), *Koormai* (sharp), *Nunmai* (subtle) and *Vemmai* (hot) properties of foods be advised to intake. Further, the tastes sour (*Pulippu*), bitter (*Kaippu*) and pungent (*Kaarppu*) predominant foods tend to normalize the humours.^[8]

Compound Siddha formulations

The Table 1 has shown a number of Siddha compound drugs could be used in the condition of MS.

Table 1: Siddha compound drugs

Compound Siddha Formulations	Pg No./ Chapter	Indications	Reference ^[14-16]
<i>Avarai Verpattai</i> extract compound	106/4	Diabetes mellitus	The Pharmacopoeia of Siddha Research Medicines
<i>Navarkottai Mathirai</i> No. 2	257/10	Diabetes mellitus and complications, polyuria, thirst and voracious appetite.	The Pharmacopoeia of Siddha Research Medicines
<i>Seenthil Sarkarai Podi</i>	457	Diabetes mellitus and complications.	Siddha Materia Medica

<i>Thuthuvelai Samoola Churnam</i>	130/4	Obesity	The Pharmacopoeia of Siddha Research Medicines
Anti cholesterol remedy tablet (special)	5/15	Fattiness of the body, obesity and <i>Kapha - Pitha</i> diseases. Blood pressure is regulated.	The Pharmacopoeia of Siddha Research Medicines
<i>Vellai Vengaya Kuligai</i> (V.V.Pill)	67	Gastro intestinal disorders, hypertension, lowers serum cholesterol	Siddha Pharmacopoeia
<i>Kariveppilai Churnam</i> compound No. 1	115/4	Indigestion, flatulence, stomach ache, diarrhoea, chest pain, heart burn, dry cough, vomiting and sluggish liver	The Pharmacopoeia of Siddha Research Medicines
<i>Vellai Poondu Mathirai</i>	275/10	Indigestion, flatulence	The Pharmacopoeia of Siddha Research Medicines
<i>Thirikaduku Churnam</i>	128/4	Remedy for all three doshic (humours) conditions	The Pharmacopoeia of Siddha Research Medicines

Single drug formulation^[15]

The following single drugs also may use in the condition of MS. *Manjal (Curcuma longa)*,^{[21][17]} *Lavanga Pattai (Cinnamomum zeylanicum)*,^[18] *Pakal*

(*Momordica charantia*),^[19] *Murungai (Moringa oleifera)*,^[20] *Vellulli (Allium sativum)*,^[21] *Chiru - Kurinchan (Gymnema sylvestre)*,^[22] *Maruthu (Terminalia arjuna)*,^[23] *Inji (Zingiber officinarum)*,^[24] *Karunjchirakam (Nigella sativa)*,^[25] *Seendil (Tinospora cordifolia)*.^[26]

The drugs need to have ability to correct the metabolic processes by controlling obesity, raise the HDL, lower the serum triglycerides, low density lipoprotein (LDL), blood glucose level and blood pressure and reduce the risk of cardiac ailments by regularizing the humours. The drug need to have tastes and properties described above and also have the pharmacological actions such as anti-inflammatory, antioxidant, immuno modulatory and rejuvenating properties thus for control the insulin resistance and other associated conditions of MS.

External therapies and *Āsanam*

The external therapies described below also useful in the condition of the MS. The external therapy depends on the patients' age, health in respect with cardiac, respiratory functions, *Naadi Nadai* (pulse diagnosis) and body built.

Podi Thimirthal can be done by rubbing warm or dry powder (*Podi*) of *Kollu (Macrotyloma uniflorum)*, *Thiripalai* (Three myrobalans) all over the body to decrease *Kapham* and reduce obesity^{[10][15]}.

Thokkanam or *Marthanam* (structured massage technique), *Mallathuthal* (supinating) used to lessen the vitiation of *Kapham* in the condition of obesity and infertility.^[10]

Further patients can be advised to do *Yogāsānam* like *Praanayaamam* (breathing exercise) followed by *Mayurāsānam* (peacock pose), *Shirshāsānam* (standing on head), *Sarvangāsānam* (standing on shoulders), *Yoga Muthirai* (psychic union pose), *Vajrāsānam* (kneeling pose), *Dhanuāsānam* (bow pose), *Machchāsānam* (fish pose), *Makarāsānam* (crocodile pose), *Halāsānam* (plough pose), *Utkatāsānam* (chair pose), *Patumāsānam* (lotus flower pose) and *Sāvāsānam* (corpse pose). The *Asanas* enhance the hormonal secretions, reduce

stress and anxiety; promote burning of fat (weight loss) and strengthen the abdomen and improve digestion.^[27]

CONCLUSION

The current study describes the Siddha perspective, etiopathogenesis, lines of treatment and remedies of MS. The prevalence of MS is increasing worldwide,^[28] that the incidence is frightening due to its mounting in developed as well as budding countries including India, ever since most recent decades. As the precise, pathophysiology of MS is unknown.^[29] Even though, genetic factors, lofty calorie diet, sedentary routine, anxiety, obesity and hormonal imbalance stimulating towards MS. The MS is remarkably semblance with *Paci iyya noi* or *Tipana iyya noi*. Therefore on this base the paper can be concluded that MS (*Paci iyya noi*) may be considered as the disorder of *Kozhuppu Thathu* (*Mētas* or adipose tissue) with vitiated *Kapham* and its proceedings lead to *Nirilivu* (diabetes mellitus), *Athi Thoola Noi* (obesity), *Pithathikam* (systemic hypertension) and finally causing *Thamaraga Noi* (cardio vascular diseases). Still the existing tactic of deterrence is substandard; the line of treatments and the Siddha drug may help to treat the MS. And further pharmacological and clinical studies in Siddha to provide conservative management of MS.

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How to cite this article: Dr. Jenefa Rose Priya T, Dr. Manikandan B. *Metabolic Syndrome and the Management : An appraisal with Siddha System of Medicine*. *J Ayurveda Integr Med Sci* 2018;5:98-103. <http://dx.doi.org/10.21760/jaims.v3i5.13825>

Source of Support: Nil, **Conflict of Interest:** None declared.
