



Title: “Etiopathological Study of Metabolic Syndrome and Prediabetes as per Ayurvedic concepts”

Authors: Shashi Kant Tiwari*¹, A. C. Kar², Kamlakar Tripathi³

1. Ph. D. Scholar, Faculty of Ayurveda,
2. Professor and Head, Dept of Vikriti Vigyan, Faculty of Ayurveda,
3. Professor, Dept. of Internal Medicine, Faculty of Medicine,

Institute of Medical Sciences, Banaras Hindu University Varanasi, Uttar Pradesh

***Corresponding Author: (drshashitiwari@gmail.com, +919454351533)**

Abstract:

About *santarpanjanya Vikaras*¹ like *Sthaulya/Medoroga*, *Prameha Hridroga* Ayurveda presumes that faulty dietary habits and lifestyle errors in accordance with genetic make of an individual alters functions of different sets of *Agni* (especially *Medodhatvagni*), which may leads to defective tissue metabolism at one side and formation of *Ama* (reactive antigenic factor) like substances at other sites. *Medhodhatvagni Mandata & Medodhatvagniansa vridhi*² increases the fatty contents in the body and *Dhatu*s and *Ama* precipitate and initiates process of inflammation that laid down the backbone of basic matrix metabolic disorders including metabolic syndrome and Prediabetes. In the present study is design to find out exact nidan and samprapti ghatok of the two clinical conditions.

Keyword:

Metabolic Syndrome, Prediabetes, *Santarpanjanya Vikara*, *Agni*

Introduction:

Metabolic syndrome is recognized as one of the major public health challenges worldwide and especially in Indian sub-continent. It is most common in adult population throughout the world. It refers to the clustering of several metabolic and cardiovascular risk factors, including dyslipidemia, hyperglycemia and increased blood pressure, where abdominal obesity and insulin resistance represent core parameters of this clusters. According to national health survey, more than one in five Americans have MS and the likelihood of having Metabolic Syndrome rises with age, affecting more

than 40% of people in their 60s and 70s. Now a day it is not only the disease of developed countries but also acquiring its place in developing countries with an alarming rate similarly the diabetes mellitus is also a major health problem of modern society almost 7 out of 10 young population were in the diagnostic range of Prediabetes and the modern health system is not sufficient to cope up with these type of metabolic derangements. So being a conventional health providers it our moral responsibility to take the challenge and find out solution of the affluent society.

Aims_and_Objects:

Etiopathological (Panchanidan) study of metabolic Syndrome and Prediabetes



Observations:

- This study shows that in case of Prediabetes the disease is more prevalent in male total 43 cases (71.67%) where as in case of MetS the disease is was more prevalent in female i.e. out of 60 registered cases 40 (66.67%) were suffered from Mets
- This study shows that in case of Prediabetes maximum number of case falls in age group 41-70 years i.e. total 29 registered cases and in case of metabolic syndrome

maximum 35 cases were falls in age group 41-60 years.

- The present study covered a cross section of the society. And it was found that majority of cases of Prediabetes were from the middle Socioeconomic status i.e. 71.67% followed by 15% patients from higher and 13.33% from lower Socioeconomic group & similarly It was found that majority of Patients of MetS were belonged to the middle socio-economic status i.e. 88.34% followed by 8.33% patients from higher and 3.33% from lower Socioeconomic group.
- This study shows that maximum numbers of the patients had no addiction i.e. (35%) & (78.33%) followed by 31.67% & 15% of betel leaves (*Pana* + *Surti* + Tobacco) addiction and 23.33% & 6.67% of alcohol addiction
- In occupational study the incidence of Pre-diabetes and metabolic syndrome was found to be (41.67%) & (18.33%) in servicemen, housewives (25%) & (58.33%) farmer (18.33%) & (5%) businessmen (13.33%) & (15%) and students (1.67%) & (3.34%) respectively.

- This study shows that majority of the patients were high school 46.67% & 28.34% and 30% had completed their graduate education for both the condition followed by middle class & illiterate.
- The incidence of habitat shows that majority of the patients were residing in urban areas (56.67%) & (53.33%) as compared to those residing in rural areas i.e. 43.33% & 46.67% .
- The study that maximum number of patients belongs to Hindu religion (86.67%) & (96.67%) followed b Muslim respectively.
- The present study reveals that no specific trend was found in relation to the dietary habits. 55% & 51.67% respectively of the patients had mixed dietary habit while 45% & 48.33% were purely vegetarians. Thus no specificity of diet with the incidence of Prediabetes & MetS can be correlated.
- The present study shows that patients of *Pittaja* predominant *Prakriti* had greater risk (40%) for developing the disease than the *Kaphaja* (35%) and *Vata* (25%) type of *Deha Prakriti*. While in case of metabolic syndrome *Kapha* dominant *Prakriti* had greater risk (51.66%) than the *Pitta* (48.34%) and *Vata* dominant *Prakriti* (0%)



- In case of others Endocrine disorders, the 16.67% of Prediabetes and 58.33% patients of Metabolic Syndrome were suffering from Hypothyroidism, while 83.33% & 41.67% of patients were not having any other Endocrine abnormalities.
- Body mass index was also calculated to identify the risk and prevalence and it was found that maximum patient in both the cases 76.77% and 83.33% respectively were registered as obese (>30 kg/m²) followed by 16.67% & 11.67 were in over weight category (25.0-29.9 kg/m²) and rest are normal weight.

Results:

On statistical analysis of above data it is found that gender, age, socioeconomic status of the patient, occupation, Family history, Deha Prakriti and association of the other endocrine disorders like hypothyroidism (p value<0.05) has strong association with causation of these disease.

Conclusion:

As per *Ayurvedic* parlance, MetS is the outcome of over nutrition due to defective tissue metabolism. *Ayurveda* strongly believes that the entire range of

digestion and metabolism of the body depends upon proper functioning of *Agnis* (biological fire) at different level in the body. Defective digestion and metabolism may lead to formation of *Ama* like reactive species at different level, which is the initial pathogenic factor for acute and chronic inflammation and is responsible for variety of disorders including metabolic syndrome. Obesity and Lipid disorders have been vividly conceived in *Ayurveda* with context of *Medoroga* and *Prameha*. The classical *Ayurvedic* texts have vividly described *Santarpanjanya Vikaras*, which comprise of diseases due to over nutrition and defective tissue metabolism. *Ayurveda* presumes that improper dietary habits and deranged functions of different sets of *Agni*, give rise to formation of *Ama* (reactive antigenic factor). Since last few decades, the conventional system of medicine is focusing on the concept of metabolic syndrome, which seems very similar to the concept of *Santarpanjanya Vikaras* of *Ayurveda*. *Ayurveda* discusses *Medadhātu* (lipid tissue) in detail in the context of *Medoroga* or *Sthaulya Roga* and clearly explains how to maintain healthy quantity and quality of fatty tissues in the body.

When *Medadhātu* interacts with preformed form of *Ama*, it changes and alters the quality and quality of fatty tissues

including cholesterol. The interaction of *Ama* with fatty tissues is known as *Sama Medadhātu*, which is the main cause of *Medoroga*, and it is the liver (*Yakrita*), which is responsible for qualitative derangement of lipids and cholesterol. This form of *Ama*, when circulates all over the body may lead to blockade of micro-channels and precipitate antigenic reactions and generate series of inflammatory events in the body. If such categories *Ama* interact with *Medadhātu*, it may lead to a variety of metabolic disorders. *Ayurveda* also believes that this form of *Meda* is checking the function of *Vata* at tissue level that may lead to insulin resistance and finally type-2 diabetes mellitus.

Medas is present in our body in two main forms, First one is mobile in nature and considered as *Posaka* (cholesterol and lipids, while are present in circulating blood) and other one which is immobile is known as *Posyi* (adipose tissues/fat). This concept pointed out that Defective *Posaka Medadhātu* is the triggering factor, which causes accumulation of abnormal *Posya Medadhātu*, which finally causes excessive fat deposition in viscera and central part of abdomen (visceral adiposity) as well as in subcutaneous tissues (subcutaneous adiposity). In the pathogenesis of MetS,



Posya Medadhatu increases inordinately in the expenses of the other *dhatu*s.

These observations of the ancient *Ayurvedic scholars* appear to be very outstanding information regarding the involvement of *meda* in *sthaulyata*, which strikingly compares with the conventional medical science of today. It is gradually conceived that there is a strong evidence of immune disorder and immunodeficiency in the patients of MetS and its related complications. Now conventional medicine has yet found a way to bring the cases of MetS under control to reasonable extent but the effort is not finally conclusive. That is why search for better medicine from other resources is still going on.

The goals of prevention are to provide a healthy life, preserving the function of insulin receptors, and preventing or delaying the micro & macro vascular as well as other cardiovascular complications. Central obesity is an extremely important environmental influence, therefore, exercise, weight loss, and drug therapies have been studied. It has been found that lifestyle modification/ intervention



provides the good benefit in preventing the pathogenesis of MetS and its progression into other major cardiovascular complications. In this regard, different management strategies for *Santarpanjanya Vikaras* have been outlined in *Ayurvedic classics* according to constitutional profile of the patient and predominance of *Dosas*.

Ethical committee permissions details:

This study was started after taking permission from the **Institute ethical committee** of the Institute of Medical Sciences, Banaras Hindu University, Varanasi

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