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HOLISTIC APPROACH TOWARDS METABOLIC SYNDROME

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ABSTRACT

In the present scenario metabolic syndrome (MetS) is a burning health issue worldwide, because of its complex aetiology, clinical presentation, management and life threatening complications. Central obesity is the key factor to initiate pathogenesis of MetS. Central obesity (visceral adiposity) is the main factors which impair Insulin action due to development of insulin resistance, which finally leads to hyperglycaemia and defective lipids production. For its management a multi-directional approach is required which includes life style modification to drug intervention. Due to its complexity, still the treatment of MetS is challenging and not so satisfactory. That is why scientific community are inclining towards other system of medicine to find out any fruitful outcome. Literature of Ayurvedic texts vividly described majority of disorders such as Prameha/Madhumeha, Medoroga etc. which resembles the sign and symptoms of MetS. The target orientated approach and specialized management of MetS is the prime attention. The present article may be helpful in providing new dimensions to the understanding of metabolic syndrome and its management through Ayurvedicparlance.

KEYWORDS: *Metabolic Syndrome, Dyslipidimia, Prameha, Madhumeha, Medoroga*

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INTRODUCTION

Few years ago metabolic syndrome was considered as the disease of wealthy people and maximum numbers of patients were from the developed countries but due to drastic changes in lifestyle and food habits, it is gradually spreading up to the middle socioeconomic group of developing countries too.(1)The metabolic syndrome consists of a constellation of several metabolic abnormalities that confer increased risks of cardio vascular disease (CVD) and Chronic Kidney Disease (CKD).(2) MetS is also known as Syndrome X or Insulin Resistance syndrome or Raeven's syndrome.(3) The whole world is facing problems with increased numbers of obese people all around especially among the young adults.(4) India is emerging as a capital of these metabolic disorders. The incidence of diabetes, CAD, Cancers etc is increasing very rapidly in the country. The major components of MetS include central obesity, hyper-triglyceridemia, decrease high density lipoprotein (HDL), hyperglycaemia and hypertension.(5)

Probable Risk Factors for Metabolic Syndrome includes Overweight/Obesity, Sedentary lifestyle, Diabetes mellitus, Aging, Coronary Heart Disease, Lipodystrophy and Beejdosha (Genetic Factors).(6)

The MetS is defined by the National Cholesterol Education Programme- Adult Treatment Pannel III (NCEP-ATP III) by the presence of 3 or more, out of these 5 criteria's-

- Waist circumference - Waist circumference >102 cm in males and >88 cm in females
- Increased Triglyceride - Triglyceride >150 mg/dl or any specific medication for this.
- Low HDL- HDL level <40 mg/dl in males and <50 mg/dl in females or any specific medication for this.
- Hypertension - Blood pressure>130/85 mm/Hg or any specific medication for this.
- Fasting plasma glucose >100 mg/dl or any specific medication for this or known case of T2DM.

Ayurvedic Concept

In this perspective Ayurveda has strongly focussed on two concepts of diseases - first one related to outcome of over-nutrition and second one related to outcome of under-nutrition.[7] As per Ayurvedic parlance the disease MetS is the outcome of over nutrition and is due to defective tissue metabolism. Ayurveda strongly believes that the whole digestive and metabolic process of the body depends upon proper functioning of biological fire (Agni) at different level in the body.[8] Defective digestion and metabolism leads to formation of Ama like reactive species at different level. This Ama is the initial pathogenic factor, responsible for variety of disorders including metabolic syndrome. Obesity and lipid disorder.[9] All these disorders are vividly described in Ayurveda in context of Medoroga and Prameha. The classical Ayurvedic texts have briefly described Santarpanjanya Vikaras, which comprises diseases due to over nutrition and defective tissue metabolism. Unhealthy dietary habits lead to deranged functions of different sets of Agni and give rise to formation of Ama (reactive antigenic factor). Since long conventional system of medicine is focusing on the diathesis of MetS, which seems similar to the concept of Santarpanjanya Vikaras of Ayurveda. Ayurveda discusses Medadhatu (lipid tissue) in detail mainly in the context of Medoroga or Sthaulya Roga.

When these moving antigenic factors (Aam) interact with Medadhatu, it alters the quality of fatty tissues including lipids. The interaction of Ama with fatty tissues is known as SamaMedadhatu, 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.[8] This form of Meda causes hurdles in proper functioning of Vata at different tissue level which leads to insulin resistance and T2DM.

Medas is present in our body in two main forms, one is mobile in nature and considered as Poshaka meda dhatu (it may be considered as cholesterol and lipids, which are present in circulating blood) and another one is immobile which is known as Poshyi meda dhatu (adipose tissues/fat).[10] This concept pointed out that Defective Poshakmeda dhatu is the triggering factor, which causes accumulation of abnormal Poshya Medadhatu, which causes fat deposition in viscera, central part of abdomen (visceral adiposity) as well as in subcutaneous tissues (subcutaneous adiposity).

In the pathogenesis of MetS, Poshya Meda dhatu increases inordinately on the expenses of the other Dhatu. In other words, while Poshya Meda dhatu is increasing all other dhatu undergo wasting on account of lack of nourishment.

In short, due to various etiological factors, the seven main factors responsible for the development of Metabolic Syndrome are -

- Genetic predisposition.[11]
- Consumption of too much unsaturated fats.
- Total sedentary life style and lack of physical exercise
- Consequences of other morbid disease
- Very high level of mental stress.
- Serious side effects of some drugs.

Aetiology of Metabolic Syndrome

The aetiology of MetS includes a cascade of many complex aetiological pathways. There are several different hypotheses regarding MetS has been introduced. Increased reactive oxygen species (ROS), oxidised LDL and lipotoxicity are the main triggering factors which starts obesity (visceral obesity) and Insulin Resistance.[12] Abnormal visceral adipose tissue releases various bioactive mediators, including pro-inflammatory cytokines that not only affects body weight homeostasis, but also induces changes in cardiovascular structure and function, glucose metabolism, lipid metabolism, blood pressure and inflammation, leading to endothelial dysfunction and atherosclerosis.[13]

VISCERAL OBESITY AND ITS IMPACT ON METABOLISM

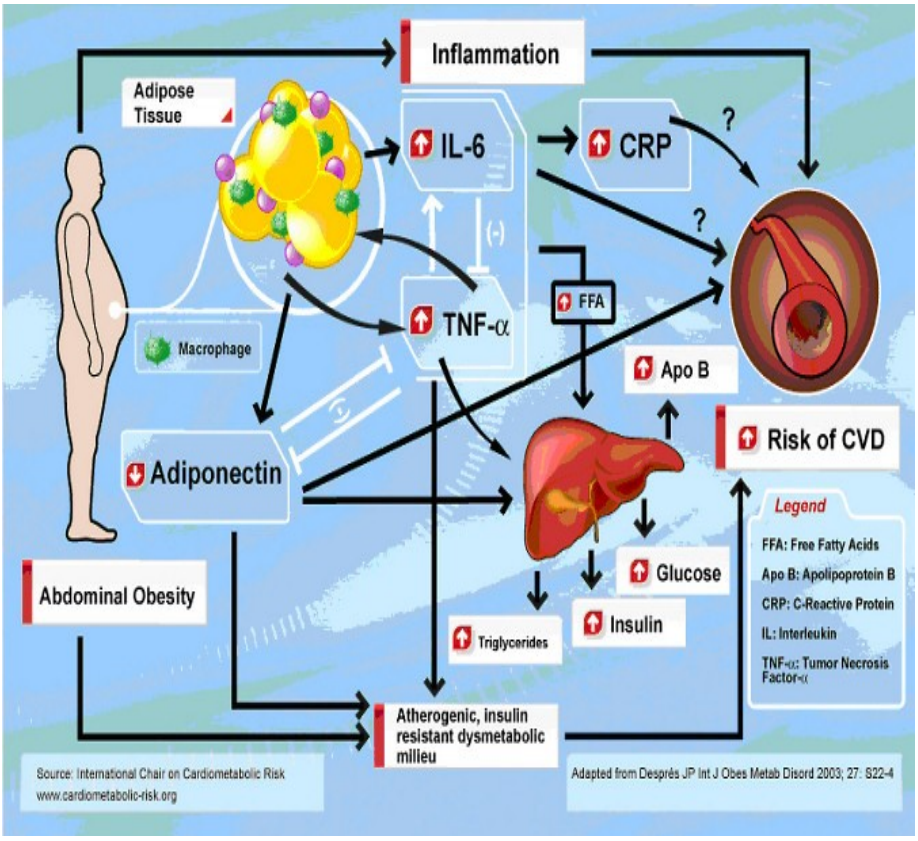

Figure 1

Endothelial Inflammation is the most critical process initiating the cascade of MetS. The pro-inflammatory state of obesity and MetS is initiated by an excessive caloric intake. Increased oxidative stress in the cells of adipose tissue is closely linked to enhanced inflammatory signals, adipokines dysregulation and Insulin resistance.[14] Redox regulation of inflammatory signalling occurs at several levels, including direct effects of oxidants and modulation by anti-oxidants. Alteration in the redox equilibrium causes activation of oxidants and transcription of cofactors such as NF-KB and AP-1. Activation of the NF-KB pathway is linked to a range of inflammatory disorders, such as atherosclerosis, myocardial infarction and diabetes.[15] The pro-oxidative state induces insulin resistance, leading to the clinical and biochemical symptoms of MetS. The resistance to insulin action promotes inflammation through an increase in free fatty acid concentration and hinders the anti-inflammatory effects of insulin which finally results to develop the Metabolic Syndrome.[16]

Modern Approach of Management

The main triggering factors in the development of MetS are oxidative stress which leads to the initiation of inflammation. Different therapeutic interventions targeting these oxidative and inflammatory processes are quite effective in the prevention and treatment of MetS.

- Primary interventions- Primary interventions for MetS includes healthy diet and healthy lifestyle which comprises[17] -
    - Calorie restriction
    - Increase physical activity
    - Change in dietary composition
- Secondary intervention- Is needed for them, whom lifestyle changes and dietary changes are not enough. For them drug therapy may be required to treat the MetS like statins, antihypertensive drug and hypoglycaemic agents.

Ayurvedic Approach of Management

The balance of doshas and elimination of excess vikrit doshas are the main target therapy as per ayurvedic parlance. For this Samshodhana and Samshamana are two important procedures in Ayurvedic therapeutic. In Samshodhana, Mridu virechana (mild purgation), ShodhanaVasti (medicated enema) and Ruksh-udvartana (dry powder application) are found to be clinically very effective in the cases of MetS.

- **Nidana parivarjana**-Nidanaparivarjanais considered as the main therapy in the management of various diseases as described in Ayurveda.Nidanaparivarjanais **"To avoid the risk factors".** Excess intake of carbohydrate and fat leads to visceral adiposity, which initiates cytokines mediated inflammation. This pro-inflammatory process causes excess formation of FFAs, which occupies the insulin receptors and finally leads to Insulin resistance. Hence, Snigdha, Guru, PichchhilAahara (diet rich in Fats), Madyapana (alcohalism) as well as Atiasan (Sedentary life styles) andAvayayam (lack of exercise) etc. are to be avoided.
- **Yogasanas-**yoga therapy helps in the balancing both nervous and endocrine system which directly influences all the other systems of the body.

Yogasana are not only body exercises, but these are important techniques which place the physical body in position that cultivate awareness, relaxation, concentration and meditation. Important Yogasans are Makarasana, Shavasana, Pavanamuktasana, Padotthanasana. Dhanurasana, Halasana and Matsyasana etc.

- **Agni Pacifying Drugs** - such as Agnitundi vati , Chitrakadi Vati, Vaishvanara Churna, Trikatu Churna, Pippali Churna etc.[18]
- **Ojas Pacifying Drugs** - such as Shilajit, Guduchi, Amalaki and Haridra etc.
- **Combined Preparations**– Important combined preparations such as-Phalatrikadi kwatha, Pushkarabramhi guggulu, Medohara guggulu, Niśāmlaki Churna, Arjuna kṣhirapaka and Sapragandha ghanavati.are found effective.

CONCLUSION

The metabolic syndrome resembles with the Santarpanajanya Vikara of Ayurveda having specific etiology and hazardous consequences on the individual health status. The management of MetS is still unsatisfactory and the available treatment options have several unwanted effects. Apart from this Ayurveda based holistic therapy is quite safer and effective which has been clinically proved by several clinical trials and researches. These ayurvedic herbs based formulations not only correct the individual metabolic state but also improve the overall wellbeing of the individuals.

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