

Trends and Perspective of Metabolic Syndrome

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Abstract: Metabolic syndrome consists of a set of risk factors that involves abdominal obesity, a decreased ability to process glucose, dyslipidaemia, and hypertension. Metabolic syndrome may be link with blood clotting and proinflammatory tendencies. Treatment for metabolic syndrome is lifestyle modification to correct obesity it is also advisable to stop smoking cigarettes. Also, drug treatment may be necessary to address hypertension and elevated cholesterol levels.

Keywords: Metabolic syndrome, dysmetabolic syndrome, dyslipidaemia, and hypertension.

INTRODUCTION

Metabolic syndrome consists of a set of risk factors that involves abdominal obesity, a decreased ability to process glucose, dyslipidaemia, and hypertension. It is important to note that patients living with this syndrome have been reported to be at an elevated risk of developing type 2 diabetes as well as cardiovascular disease. It is a common condition that may be called dysmetabolic syndrome, syndrome X, insulin resistance syndrome and obesity syndrome [Alberti, K.G.M.M, 2005].

In urban areas, patients have been informed about the relevance of checking serum cholesterol concentrations, looking for signs of diabetes, having their blood pressure monitored, and performing exercising [Saklayen, M.G, 2018]

It has been reported that the rate of metabolic syndrome is high in men than women at the ages of 25 and 64. Though, after the age of 65 years, the prevalence of the metabolic syndrome is elevated in women than in men. Hence, age and increasing waist circumference are contributory to metabolic syndrome [Hernandez-Baixauli, J. *et al.*, 2020].

Furthermore, it has been reported that many diagnostic criteria have been propounded by various organizations over the past years [Giovannucci, E. *et al.*, 2007].

In 1998, World Health Organization (WHO) was in the vanguard of publishing an internationally accepted definition for metabolic syndrome. Later other organizations followed with slightly different definitions.

In order to provide more consistency in both patient care and research, In 2009, there was a conglomeration of various organizations including the International Diabetes Federation, The National Heart, Lung and Blood Institute (NHLBI), the American Heart Association (AHA),

World Heart Federation, and the International Association came up accepted and harmonized definition of metabolic syndrome[Xu, H. *et al.*, 2018].

According to these organizations, the risk factors of metabolic syndrome include the following
Elevated waist circumference

Raised triglycerides ≥ 1.7 mmol/L (≥ 150 mg/dL)

Fasting triglycerides greater than or equal to 1.69 mmol/L (150 mg/dL)

Reduced HDL cholesterol < 1.0 mmol/L (< 40 mg/dL) in men, < 1.3 mmol/L (< 50 mg/dL) in women.

Elevated blood pressure ≥ 130 systolic or ≥ 85 diastolic.

Elevated fasting glucose ≥ 5.6 mmol/L (≥ 100 mg/dL) or previously diagnosed type 2 diabetes[Cuspidi, C. *et al.*, 2008]. Therefore having any 3 of 5 risk factors listed above constitutes a diagnosis of metabolic syndrome [Alessi, M.C. *et al.*, 2008].

It has been indicated that metabolic syndrome may be link with blood clotting and proinflammatory tendencies. In as much as the combined criteria and risk factors do not commonly lead to symptoms that are obvious to the affected person, they are a warning of an elevated likelihood of clogged arteries, heart disease, stroke, diabetes, kidney dysfunction as well as premature death. It is important to note that complications from untreated metabolic syndrome can develop in as few as 15 years. According some reports, Smokers with metabolic syndrome tend to have an even poorer prognosis [Grundny, S.M, 2008].

Furthermore, it has been reported that the common cause of various cases of metabolic syndrome can

be associated to poor eating habits and a sedentary lifestyle. Others can happen in people already diagnosed with hypertension and in those with poorly controlled diabetes. While a few are associated to genetic factors [Shields, T.M. *et al.*, 2004].

These factors associated with metabolic syndrome are interrelated. According to Turkoglu [Huang, P.L, 2005], obesity as well as lack of exercise are linked to insulin resistance. Insulin resistance has a negative effect on lipid production, increasing very low-density lipoprotein, low-density lipoprotein and triglyceride levels in the bloodstream and decreasing high-density lipoprotein. This may result to fatty plaque deposits in the arteries which over time can cause cardiovascular disease, blood clots and strokes. Insulin resistance may result to increased insulin and glucose levels in the blood. It is important to note that highly elevated insulin increases sodium retention by the kidneys, which elevates blood pressure. This can lead to hypertension. Persistently elevated glucose levels in turn harm blood vessels as well renal organs[Türkoglu, Ç. *et al.*, 2003].

When metabolic syndrome is suspected laboratory tests are important in establishing the diagnosis. The recommended tests include:

Glucose test: Usually a fasting glucose test is performed but, in some cases, glucose tolerance test – several glucose tests may be done. The aim of glucose testing is to determine whether a patient has diabetes or an impaired response to glucose.

Lipid profile test: This measures HDL, LDL and triglycerides. If the triglycerides are significantly elevated, a direct measurement of the LDL may need to be done.

Haemoglobin A1c (HbA1c) test. This is a measure of glucose control and can be used for the diagnosis of diabetes [Welty, F.K. *et al.*, 2016].

On the other hand, the non-laboratory tests for diagnosing metabolic syndrome include Blood pressure which checks for hypertension. Weight and waist circumference which document abdominal obesity [Ito, M.K, 2004]

Body mass index which is an alternate measure of obesity. It is calculated by taking: (weight in kilograms) / (height in metres squared).

An adult with a BMI greater than 30 Kg/m² is considered obese. [Huang, P.L, 2005; Meigs, J.B, 2004]

CONCLUSION

The primary treatment for metabolic syndrome is lifestyle modification to correct obesity. Those affected should lose excess weight and exercise regularly. It is also advisable to stop smoking cigarettes.

Also, drug treatment may be necessary to address hypertension and elevated cholesterol levels.

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