The ticking clock of metabolic syndrome: why early detection matters

Metabolic syndrome is a complex set of interconnected physiological, biochemical, and metabolic factors that contribute to the development of several chronic conditions, such as cardiovascular disease or type 2 diabetes.[1]

How is metabolic syndrome diagnosed?

The most widely used current definitions for the diagnosis of the metabolic syndrome were established by the National Cholesterol Education Program's Adult Treatment Panel III (ATP III)[2] and the International Diabetes Federation (IDF).[3] Both include the following criteria for each of its components:

- **Abdominal obesity:** waist circumference > 102 cm in males and > 88 cm in females (for ATP III criteria, IDF provide ethnicity specific values).
- **Raised triglycerides:** ≥ 1.7 mmol/l (150 mg/dl) or drug treatment for elevated triglycerides. *
- **Reduced high-density lipoprotein cholesterol:** < 1.03 mmol/l (40 mg/dl) in males and < 1.29 mmol/l (50 mg/dl) in females or drug treatment for low HDL-cholesterol*
- **Raised blood pressure:** systolic ≥ 130 mmHg/ diastolic ≥ 85 mmHg or drug treatment for hypertension*
- **Raised fasting plasma glucose:** ≥ 5.6 mmol/l (100 mg/dl) or drug treatment for elevated plasma glucose. *

*Shared for the ATP III and IDF criteria, although IDF definition includes drug treatment for each component among the criteria.

Metabolic syndrome is clinically diagnosed when three of the previous criteria are met according to the ATP III definition, or when abdominal obesity plus other two criteria are fulfilled in line with the IDF definition. [2,3]
The IDF definition differs from the ATP III definition in that it requires evidence of central obesity for the diagnosis. The rationale for this requirement is that central obesity is more strongly correlated with the other metabolic syndrome features than is any other parameter and is highly correlated with insulin resistance.

How is metabolic syndrome managed?

Currently, there are no guidelines for the management of metabolic syndrome as a whole, which may hamper an integrative approach by primary care physicians. Each component should be addressed individually, following the recommendations in disease-specific guidelines. [4,5]
A combination of lifestyle and behavioural changes—promoting a more active lifestyle and a healthy diet—is considered the priority to reduce the severity of metabolic syndrome components, thereby lowering the risk of developing associated conditions such as cardiovascular disease.[5,6,7]
Component-specific pharmacologic options are also considered when exercise and diet alone are not enough.[5]

Why early identification of metabolic syndrome matters in primary care

General practitioners are often the first to observe clustering of risk factors during routine consultations. Early recognition in this setting is valuable not only for risk stratification, but also for patient education as a metabolic syndrome diagnosis can serve as a wake-up call that motivates patients to improve their lifestyle.[4,5] Even without using the metabolic syndrome label, the concept can be used to emphasise how their risk factors are interrelated and why they need a multidimensional and prompt approach.[4]
Recognizing patients who are on the trajectory towards metabolic syndrome, allows primary care physicians to prevent progression to other complications.[8,9] This has led to proposing a pre-metabolic syndrome state for those individuals who are close to meeting previously mentioned criteria. A recent publication has drawn attention to elevated serum uric acid, the presence of non-alcoholic fatty liver disease, or diminished muscle strength as additional predictive markers for early metabolic syndrome or metabolic health status. Their identification may allow clinicians to implement lifestyle changes or other preventive measures before patients cross the threshold into metabolic syndrome.[9]

Conclusion

Early identification of metabolic syndrome in primary care enables appropriate interventions. Furthermore, a prompt and comprehensive management may help reducing the healthcare burden of metabolic diseases. Primary care providers are the ideal role for identifying metabolic syndrome in its nascent stages by utilizing a combination of traditional measures, new biomarkers, and a holistic view of patient's risks.

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