Obesity and its Metabolic Phenotypes

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The affordable and easy availability of processed calorigenic fat rich food globally has been the driving force for obesity pandemic worldwide. The adult obese are around 600 million and this population has doubled in the last 50 years. 41 million children under the age of 5 are overweight or obese. Body Mass Index (BMI) is the most widely used index for categorizing underweight, overweight and obese adults but it does not distinguish between weight associated with muscle and weight associated with fat. Anthropometric measurements like waist circumference, waist-to-hip ratio (WHR), waist-to-height ratio (WHtR) have been studied but no consensus could be achieved to include them in defining obesity. As a result every obese is considered at risk of future comorbidities and every non-obese/overweight is considered healthy. The economic implications of treatment of every obese is enormous and unnecessary and at the same time depriving non-obese population from any future risk protection is underestimating their actual health.

This observation is not new and it was realized as early as 1980 that metabolic health should be assessed separately in any individual irrespective of presence or absence of obesity and BMI. Thus came the concept of Metabolically healthy obese (MHO) and Metabolically Unhealthy Normal Weight (MUHNW)/Metabolically Obese Normal Weight (MONW).

Metabolically healthy obese (MHO)

These non-obese individuals have abnormal fat distribution and may have metabolic derangements despite normal weight. Thus there exists a range of population which may be metabolically unhealthy irrespective of weight. Studies have shown higher waist circumference, increased insulin resistance, low HDL, high triglyceride and high inflammatory markers in MUHNW individuals. No clear definition is
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present for identifying these patients. Some have suggested for presence of at least three or more metabolic derangements to say metabolic unhealthy while recently TyG index-a product of the fasting blood glucose and triglyceride levels has also been suggested to identify MUHNW patients.

The treatment for MHO and MUHNW is as controversial as their origin. Lifestyle modifications and exercise are of limited benefit in MHO in some studies whereas both lifestyle and pharmaceutical therapies are beneficial in MUHNW individuals.

The paucity of consensus on defining these phenotypes of obesity is an opportunity for further in depth research in area of metabolic health.

Bibliography


