

Mindfulness Meditation, Obesity and Type 2 Diabetes

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Commentary

Obesity and the associated diseases such as type 2 diabetes are the leading causes of human morbidity and mortality but the biological mechanism of obesity is not clearly understood^[1]. The patient often struggles to maintain a more active lifestyle and a healthy diet. Here we suggest that mindfulness should be explored as an adjunct therapy for this disease. The rationale for this suggestion follows.

Obesity is considered to be a chronic low-grade inflammation with systemic changes caused by the accumulation of visceral fat^[1]. The increase in fat mass leads to the recruitment of monocytes into the adipose tissue and their development into macrophages^[2]. These macrophages release inflammatory molecules such as TNF- α , IL-6, CRP. TNF- α increases NF- κ B signaling which directly inhibits insulin signalling by phosphorylation of the insulin receptor. These pathways are associated with Type 2 diabetes- a metabolic disorder characterized by hyperglycemia and insulin resistance^[3]. Obviously, the best approach to the management of obesity is to prevent the accumulation of excess calories that leads to the visceral fat deposits. The question here is if intervention by meditation in these pathways can act as an adjunct therapy.

Meditation has been practiced in different forms in just about every culture for millennia. In general meditation is a continued or extended thought, reflection, or contemplation but in recent scientific literature the term mindfulness is used for more strictly defined practices. Mindfulness is a non- judge mental, moment-to-moment awareness of physical sensations, perceptions, affective states, thoughts, and imagery^[4]. It has been shown to have beneficial effects in psychological and physiological functioning. Several scientists have used the mindfulness method of Kirya Kirtan in which the subjects use an audio for chanting and perform defined manual actions^[5]. Mindfulness results in prefrontal cortex activation, amygdala deactivation, and possibly changes in the activities of other brain areas^[6-8]. Studies

show that this form of mindfulness may down regulate the production of molecules such as TNF- α , NF- κ B, IL-6, CRP, and down regulate key genes involved in the transcription of these molecules^[5,9]. Such down regulation could improve the inflammatory profile that leads to and sustains the development of type 2 diabetes.

The above rationale suggests a need for studies on the direct use of mindfulness or other forms of meditation as an adjunct therapy for obesity or diabetes. It would be naive to think that this task would be straight forward. One of the difficulties would be to separate the effect of mindfulness from that of physical activity. The learning curve of the subjects to the mindfulness techniques would add to heterogeneity. Ruling out a placebo effect by choosing appropriate control treatments would be another challenge. Those collecting the data on body weight and various tests (glucose levels, insulin resistance, inflammation markers and others) would need to be blinded to the treatment status of the subjects. Finally, since the effects of the therapy may be small, it should be used only as an adjunct to the other treatments. Despite the caveats discussed here, such a study may be important to improve the lives of millions worldwide. As a preventive measure, mindfulness may represent a change in lifestyle as an adjunct to exercise and healthy diet.

Conflict of Interest: There is no conflict of interest.

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