

MALE HYPOGONADISM WITH TYPE 2 DIABETES MELLITUS/OBESITY: A SYSTEMATIC REVIEW

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Introduction

Male Hypogonadism is characterized by reduced levels of testosterone synthesized in Leydig cells of testes. Although hypogonadism has been reported in up-to 40% men with obesity and/or Type 2 Diabetes Mellitus(T2DM), it still remains under-reported as well under-diagnosed. The main treatment for hypogonadism is testosterone replacement therapy (TRT). As there is a scarcity of large randomized controlled trials in male hypogonadism with T2DM/obesity, the effect and benefit of TRT shall be further studied. [1]

Aim and Objectives

To conduct a systematic review about TRT treatment for male hypogonadism with T2DM/obesity and the effect of cardiovascular events in TRT treatment.

Result and Discussion

In this review, initially, a total of 320 articles related to TRT in hypogonadal men have been identified. However, only 198 studies were eligible for the review (including 86 RCTs and 112 non-RCTs). 75 RCTs and 97 non-RCT were excluded as these RCTs and non-RCTs did not come under the purview of inclusion criteria. Benefits of TRT and reduced adverse cardiovascular events in TRT were observed in some of the RCTs. These RCTs were reviewed. A few RCTs showed a neutral effect on cardiovascular events. In non-RCTs, 15 studies observed benefits of TRTs and some of the supported TRT as there is a reduced adverse cardiovascular event in TRT. TRT is proved to be effective to regain erectile function in hypogonadal men with T2DM. It also helps to reduce fat mass. It increases insulin sensitivity in hypogonadal men with T2DM. [1] TRT can not only use for sexual symptoms relating to testosterone deficiency but also uses for symptoms like depressed mood, fatigue and obesity. [2] The main aim of TRT is to treat testosterone deficiency. It will increase the low testosterone level to normal level. After TRT hypogonadism symptoms will reduce to an extent. [3]

Material and Methods

A systematic review of the literature that involved TRT treatment of male hypogonadism with T2DM /obesity was carried out and focused on cardiovascular outcomes of TRT. PubMed, Cochrane Library, Google Scholar and Web of Science were searched using search terms “male hypogonadism”, “testosterone”, “testosterone replacement therapy”, “cardiovascular events”, “testosterone deficiency” and “diabetes mellitus” and/or “obesity”. In this review, studies in which (1) study subject consist of men with T2DM/ obesity and (2) study subject consist of hypogonadal men with T2DM who underwent TRT were included. Studies in which (1) study participants who underwent systemic glucocorticoid treatment within 3 months, (2) study participants who had a history of prostate cancers and (3) study participants with elevated PSA are excluded.

Meta-Analysis

A study by Corona et al demonstrated that there was no risk of cardiovascular events upon receiving testosterone treatment. This study was a meta-analysis of randomized control trials. [4] Most of the meta-analyses showed that there was no evidence appeared regarding the association of CV events and TRT treatment. TRT associated mortality risk was also not reported by several meta-analyses. Coronel et al have conducted a meta-analysis regarding the effect of TRT in hypogonadal men. In this metaanalysis risk of CV events due to TRT was not reported. [5]

Conclusion

Hypogonadism may develop due to mutations in Luteinizing hormone β subunit gene, myotonic dystrophy, cryptorchidism, testicular trauma, orchitis, testicular radiation, chemotherapy, autoimmune testicular radiations, excessive alcohol drinking, infiltrative diseases and cirrhosis. T2DM men with hypogonadism showed a higher risk for cardiovascular mortality than males having healthily functioning gonads. TRT is one of the treatments available for male hypogonadism. Most of the metaanalyses showed that there was no evidence appeared regarding the association of CV events and TRT treatment. Many RCTs and Observational studies showed that cardiovascular risk factors were not related to TRT use. Therefore, this study concluded that TRT is safe and effective to normalize testosterone levels in T2DM/obese hypogonadal men and there is no CV risk upon receiving TRT.

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