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EFFECT OF METFORMIN THERAPY ON TESTOSTERONE LEVEL IN MEN WITH TYPE 2 DIABETES MELLITUS AMONG IRAQI POPULATION

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ABSTRACT : Diabetes is a global health problem, type 2 diabetes mellitus (T2DM) is the main kind of disease, which is related with several healthy problems. Measurements of serum testosterone are useful in the diagnosis and monitoring of sexual activity and secondary hypogonadism. Males with small amount of testosterone are at developed possibility for the progress of T2DM with reason the stimulation of insulin resistance because of the free testosterone levels is contrary associated with insulin resistance. This study aimed to evaluate the level of serum testosterone among T2DM with further analysis the possible effect of diabetic pharmacotherapy (metformin beside uncontrolled without metformin user) upon these changes. The study included 100 patients divided into four groups: one subject with uncontrolled, second subjects with metformin alone, third subject with insulin alone, fourth subject with insulin plus metformin and the fifth subject healthy group. The results indicated that the concentration of testosterone was significantly low in the uncontrolled group as compared with metformin, insulin and both group. The same finding was observed with insulin alone. Whereas, the findings of both treatments were significantly different compared to other groups. Besides, metformin has more effect on testosterone level, while insulin alone has lower than metformin. Metformin may have a specific interaction with mechanisms involved in reversible secondary hypogonadism particularly through enhancement of testosterone secretion and other relative hormones production. These data indicated for the first time the role of metformin function in mediating the enhancement of testosterone level on T2DM patients.

Key words : Testosterone, metformin, T2DM.

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INTRODUCTION

The incidence of diabetic disease is increasing fast in the world and its morbidity and mortality extended due to several complications related to this healthy problem. Clinically, this disease includes several signs such as a high glucose level in blood, poor blood supply within limbs vessels, blood vessel, heart, retina, beta cell of the pancreas damage as well as damage of neurons around the limbs and other organs (Rask-Madsen and King, 2013). Basically, diabetic divided into two types, the first one is related to autoimmune condition inducing damage of the beta cells in pancreas known with Type 1 diabetes (T1D). The second one is type 2 diabetes (T2D), this is highly prevalence, considered a primary trouble of increasing defect of glucose regulation via mechanism of insulin resistance and pancreatic beta cells dysfunctional (Alberti and Zimmet, 1998). T2DM is a disorders of endocrine system documented for 90% of diabetic patients, described by many symptoms like hyperglycemia, polyuria, polydipsia, loss of weight because damaged insulin secretion or action and polyphagia (Kerner and Brückel, 2014). Metformin is most widely used oral antidiabetic drug in human. It is remain managed in all types of diabetes as a first-choice treatment, but more essential with type 2 diabetes mellitus (Del Barco *et al*, 2011). Metformin regulates glucose level through many mechanisms such as decreases production of hepatic glucose, enhance glucose used by peripheral tissues and promote the sensitivity of insulin. Importantly, metformin is only observed in patients with T2DM to decrease blood glucose levels (Inzucchi *et al*, 2012). Also, metformin has other mechanisms to regulate blood sugar through targeting the liver to decrease the process of gluconeogenesis and metabolism of skeletal muscles to