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Association of obesity and hypogonadism in Saudi type 2 diabetic patients

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Abstract: The world is witnessing a diabetes pandemic. It is expected that the estimated number of patients with diabetes of 150 million in the late 1990s will reach 300 million by 2025. In the late 1970s and early 1980s diabetes was not considered a commonly encountered medical diagnosis in Saudi Arabia even in high-risk groups, and among the male Saudi population the prevalence of diabetes was not different from other parts of the world. However, this seems to have changed dramatically in the last two decades, as the prevalence of diabetes in Saudi Arabia is now one of the highest in the world. Diabetes mellitus, especially type 2 is a polygenic disorder and the high consanguinity rate among Saudis may be playing a significant role in its prevalence. Also, obesity is a well-known and strong risk factor for diabetes, especially in high-risk population. National epidemiological survey by Al- Nozha et al (2004) showed the overall prevalence of type 2 diabetes mellitus is 27.3%. Insulin resistance is an important feature of type 2 diabetes. It is being increasingly recognized that low testosterone levels in men are associated with reduced insulin sensitivity and type 2 diabetes. Furthermore, male hypogonadism is a clinical condition that affects a significant number of men in the United States and can involve up to 50% of men diagnosed with type 2 diabetes. Older age and obesity may be risk factors, as both are associated with type 2 diabetes and both decrease testosterone levels. Sex hormone-binding globulin (SHBG), the major serum carrier protein for testosterone, also may have an impact. SHBG levels fall with obesity and increase with aging. Some studies indicate lower SHBG levels in type 2 diabetes. However, free testosterone levels fall with increasing age and obesity, rendering many type 2 diabetic patients testosterone deficient. Recent work shows a high prevalence of low testosterone and inappropriately low LH and FSH concentrations in type 2 diabetes. This syndrome of hypogonadotrophic hypogonadism is associated with obesity, and other features of the metabolic syndrome (obesity and overweight, hypertension and hyperlipidemia) in patients with type 2 diabetes.However, the duration of diabetes or HbA1c were not related to hypogonadotrophic hypogonadism. Furthermore, recent data show that hypogonadotrophic hypogonadism is also observed frequently in patients with the metabolic syndrome without diabetes but is not associated with type 1 diabetes. Thus, hypogonadotrophic hypogonadism appears to be related to the two major conditions associated with insulin resistance: type 2 diabetes and the metabolic syndrome. CRP concentrations have been shown to be elevated in patients with hypogonadotrophic hypogonadism and are inversely related to plasma testosterone concentrations. This is of interest since inflammatory mechanisms may have a cardinal role in the pathogenesis of insulin resistance. Hypogonadotrophic hypogonadism may be the result of insulin resistance at the level of the GnRH secreting neuron. Low testosterone concentrations in type 2 diabetic men have also been related to a significantly lower hematocrit and thus to an increased frequency of mild anemia. Low testosterone concentrations are also related to an increase in total and regional adiposity, and to lower bone density. Erectile dysfunction (ED) is a common and distressing complication of diabetes. Large differences in the reported prevalence of ED from 35% to 90% among diabetic men could be due to differences in methodology and population characteristics. Advancing age, duration of diabetes, poor glycaemic control, hypertension, hyperlipidemia, sedentary lifestyle, smoking, and presence of other diabetic complications have been shown to be associated with ED in diabetic patients in cross-sectional studies. ED in diabetic patients is multifactorial in aetiology and is more severe and more resistant to treatment compared with non-diabetics. There are no studies demonstrating the prevalence of hypogonadism in type 2 diabetic patients in Saudi Arabia .The aims of this study were to find out the prevalence of hypogonadism in Saudi type 2 diabetic patients by measuring total & bioavailable testosterone levels and by calculating the free testosterone levels. Moreover, the study also aimed to identify the effect of metabolic syndrome and other factors on testosterone levels and thus to highlight the importance of evaluating the gonadal system of type 2 diabetic patient visiting the clinic. CONCLUSIONS— Testosterone levels are frequently low in Saudi men with type 2 diabetes, and the majority of these men have symptoms of hypogonadism. Obesity is associated with low testosterone levels in diabetic men.

Biography

Asim Hassan is a graduate from from King Edward Medical College Lahore Pakistan. He has a MRCP (UK) and SCE(UK) (Speciality certificate Examination) from the royal college of Physicians of United Kingdom. Currently he is working as a Consultant Endocrinologist & Assistant Professor in University Diabetes Center, King Abdul Aziz University Hospital, King Saud University Riyadh Saudi Arabia.