Research Article

Investigate the Relation of Age, BMI, and Smoking in Iraqi Patients with Diabetes Mellitus

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ABSTRACT

Type 2 (noninsulin-dependent) diabetes mellitus is one of the greatest dominant prolonged diseases globally and touches further than 15 million people in the United States (1). The morbidity related with diabetes is considerable, including evidently improved risks of cardiovascular disease, blindness, and renal failure. The results reported a positive correlation between fasting blood glucose in patients with diabetes mellitus with (age, BMI and number of cigarette) in conclusion: Smoking surges diabetic prevalence and exaggerates glucose homeostasis. Smoking should be prevented in patients with diabetic. Therefore, patients should be knew the consequence of smoking on their disease and suggesting to them a plane or program for quitting.

Keywords: Diabetes mellitus; age; BMI; smoking.

INTRODUCTION

Type 2 (noninsulin-dependent) diabetes mellitus is one of the greatest dominant prolonged diseases globally and touches further than 15 million people in the United States [1]. The morbidity related with diabetes is considerable, including evidently improved risks of cardiovascular disease, blindness, and renal failure; economic costs have been appraised to approach $100 billion every twelve months in the United States [2]. Four large-scale prospective studies have revel the prospect that cigarette smoking may surge the threat of type 2 diabetes mellitus [3,4,5,6] while three others found no relationship concerning diabetes and smoking [7,8,9]. Smoking upturns blood glucose levels afterward an oral glucose consumtion [10, 11] and may weaken insulin sensitivity [12]. Smokers are more resistant than nonsmokers to insulin-mediated glucose uptake and are more hyperinsulinemic in reply to an oral glucose load. This insulin resistance related to smoking may account, for the dyslipidemia (reduced high density lipoprotein [HDL] cholesterol and amplified triglyceride concentrations) and amplified threat of coronary heart disease in the middle of smoker's people [13]. Even though smokers be susceptible to be thinner, cigarette smoking has similar been related to greater than before of abdominal fat distribution and grander waist to-hip ratio [14, 15] which may influence glucose tolerance, [16] Vascular altered and decrease blood flow to skeletal muscles in smokers may lead to the insulin resistance [13]. Supplementary, smoking surges free radical oxidative harm and oxidative stress [17] factors that have been concerned in causing diabetes [18]. Lastly carbon, nicotine, monoxide, or other chemical components of tobacco may have straight toxic properties on the beta cell function, insulin receptor sensitivity and pancreas [19, 20, 21].

SUBJECTS AND METHODS

Subjects

This study was performed during the period from September to December 2016. This study includes three hundred patients with diabetes mellitus were admitted to Outpatient clinic at the national diabetes center/ AL-Mustansiriya university the study conducted from September till December 2016. Patients between (30-84) years old were included in this study.

Statistical analysis

Statistical analysis was performed by statisticians with the SPSS 15.01 Statistical Package for Social Sciences and also Excel 2003. Data analysis was done using chi- square test for tables with frequencies, while we used independent sample *t*-test for tables with means and standard deviations. *P* value of ≤ 0.05 was used as the level of significance. Correlation coefficient used to find the correlation between studied markers by using person correlation. Descriptive statistics for the clinical and laboratory results were formulated as mean± standard error.

RESULTS

The patients divided to male group and female group which sub divided according to age: Group A (30-39) years, Group B (40-49) years, Group C (50-59) years, Group D (60-69) years, Group E (70-84) years.

Table 1: The mean±SD for the studied parameters for the male group

Male Group	Fasting blood glucose mg/dl	H1Ac%	BMI	No. of cigarettes/day
Group A	202.125±119.009	10.075±3.177	25.162±2.835	7±4.449
Group B	236.708±87.279	9.670±1.868	30.133±3.432	7.625±4.581
Group C	462.0±96.336	8.6±5.860	35.7±29.413	9.826±8.688
Group D	190.14±59.870	7.744±1.315	29.164±4.747	11.86±10.989
Group E	178.58±61.58	8.629±2.195	27.479±4.608	9.083±7.905

Table 2: The means for the studied parameters for the female group

Group	Fasting blood glucose mg/dl	H1Ac%	BMI	No. of cigarettes /day
Group A	231.666±53.381	9.75±1.479	27.616±4.008	4±1
Group B	200.4±65.432	9.031±1.908	32.495±5.614	5±3
Group C	236.615±84.636	9.690±1.991	32.767±5.592	10±1
Group D	236.615±84.636	9.690±1.991	32.767±5.592	10±3
Group E	229.375±92.907	9.131±1.827	30.787±5.833	8±2

Table 3: The correlation between fasting blood glucose with (H1Ac%,BMI and No. of cigarettes/day) for male group

Male Group	H1Ac%	BMI	No. of cigarettes/day
Group A	0.677	-0.245	-0.371
Group B	0.419	-0.056	0.074
Group C	0.380	0.204	-0.199
Group D	0.519	-0.043	0.204
Group E	0.434	-0.120	-0.177

Table 4: The correlation between fasting blood glucose with (H1Ac%,BMI and No. of cigarettes/day) for female group

Female Group	H1Ac%	BMI	No. of cigarettes/day
Group A	0.504	0.545	0.0
Group B	0.524	-0.165	0.093
Group C	0.557	0.136	0.557
Group D	0.557	0.136	-0.143
Group E	0.631	0.099	-0.174

DISCUSSIONS

This study investigate the relation between diabetes mellitus with age, BMI and smoking in Iraqi patients with diabetes mellitus our results reval positive correlation with age, MBI and number of cigarette which illustrate in table 1,2,3,4. Some study from US reveal that male recent cigarette smoking was linked with a large surge in the incidence of type 2 diabetes mellitus. A dose response gradient between amplified smoking and the threat of diabetes was detected. For peoples in whom smoking was further common, superior population-attributable threats are possible. Cigarette smoking, consequently, may underwrite to the amplified threat of type 2 diabetes mellitus detected with the adoption of behaviors that are common in developed countries [21].The threat elevation linked with cigarette smoking was like to that attributable to mild overweight or hypertension. The guidelines from the Korean Diabetes Association, smoking interruption are suggested as one of the most significant steps in avoiding the cardiovascular complications of diabetes[22]. Several studies have reported that the adverse properties of smoking on diabetes mellitus are not only diabetic macrovascular complications but the fundamental nature of its connotation with diabetes and the evolution of diabetic microvascular complications. Even though smoking is known to reduce body weight, it is related with central obesity [23]. Smoking as well upsurges oxidative stress and inflammation [24], to in a straight line damage β-cell function [25] and to weaken endothelial function [26]. Several cohort studies in Korea have described that smoking was connected with an amplified threat for the progress of diabetes. Cho et al. [27] monitored 4,041 men for 4 years in country and city settings in Korea, and reported that historical and present

smokers had a meaningfully amplified danger for type 2 diabetes, and the threat enlarged with the number of cigarettes smoked. One more study reported a 14-year-long prospective cohort study, in which the hazard of diabetes between men and women who smoked 20 cigarettes or more per day was 1.55 matched to those who certainly not smoked [28]. A Japanese study described parallel results of a positive correlation between cigarette intake and threat for diabetes [29]. The health professionals' follow-up study confirmed that the threat for diabetes in the middle of men who smoked ≥25 cigarettes per day was 1.94 [30]. British study displayed the threat for diabetes in smoking men was around 1.7, after adjusting for confounding factors, such as body mass index, age, alcohol intake, physical activity, antihypertensive treatment, and social class [31]. There have been limited studies on the consequence of smoking on the threat of diabetes in women as usually the occurrence of smoking is inferior in women than men. However, the results from the Nurses' Health Study in the United States (114,247 women, 1,227,589 person-years follow-up) exposed that the threat for diabetes in smokers was 1.42 after adjustment for other risk factors [32, 33] The precise mechanism for why smoking surges the threat of diabetes and weakens glucose homeostasis has not been wholly explained, but the available indication displays that smoking rises insulin resistance. In healthy young men, acute smoking presented an amplified insulin resistance [34]. Smokers had a suggestively amplified homeostatic model assessment insulin resistance index an hour after smoking [35]. The smoking compact insulin mediated glucose uptake by 10% to 40% in men who smoked matched with non-smoking men [36, 37]. In addition to amplified insulin resistance, smoking as well displayed dyslipidemia prone to atherosclerosis [39].

In expressions of glucose homeostasis, smoking has a negative consequence on glucose control. In a population-based prospective study, cigarette smoking was positively related in a dose dependent manner with raised up HbA1c after adjustment for potential confounding by dietary variables [40]. Some study conveyed in patients with diabetes in Sweden; smoking type 1 and type 2 patients had a greater mean HbA1c but a minor mean body mass index than non-smokers [41]. The smoking special effects on microvascular diabetes difficulties vary across reports. Commonly, some studies have revealed that smoking has a contrary consequence on diabetic nephropathy, but the impact of smoking individualistically with glucose control, on retinopathy and neuropathy are uncertain. A study by Biesenbach et al. [42], a 13-year follow-up study and the development of nephropathy was obviously greater than before in smokers.

In prospective studies by Chuahirun and Wesson [43] and Chuahirun et al. [44], the confrontational properties on diabetic neprhropathy in type 2 patients were established, even in optimal hypertensive patients. Smoking has been revealed to be a noteworthy threat factor for all-cause mortality, and for mortality due to CVD and coronary heart disease (CHD) in diabetics. Smokers die on average 8 to 10 years younger than non-smokers, as age is arrived into most multi-regression analysis [45] Smoking is a most important threat factor for CVD in non-diabetic subjects, as well as diabetic subjects. In an 8-year prospective study, smoking was considerably connected with an amplified threat for CHD in diabetic patients [46]. The UKPD study noticeably exposed that smoking was a important and independent threat factor for CHD in type 2 diabetic patients [47]. In the Nurses' Health Study, in women with type 2 diabetes, it was confirmed that cigarette smoking was linked in a dose-dependent mode with an amplified mortality and CHD. Matched with never-smokers, the virtual threats for CHD were 1.66 for present smokers of 1 to 14 cigarette per day, and 2.68 for present smokers of 15 or further cigarettes per day [48, 49]. Newly, a meta-analysis in the Asia-Pacific area, in men with diabetes, the threat ratio matching present smokers with non-smokers was 1.42 for CHD. In Asia, where there are great rates of smoking, and a quickly growing incidence of diabetes [50].

The prevalent of type 2 diabetes is obviously related to growing rates of overweight and obesity, but prognoses by the Centers for Disease Control and Anticipation (CDC) propose that even if diabetes prevalence rates level off, the frequency of diabetes will twofold in the next 20 years, in part due to the aging of the population [51]. Additional plans recommend that the number of cases of diagnosed diabetes in those aged 65 years will surge by 4.5-fold between 2005 and 2050 [52]. Older adults with diabetes have the main rates of most important lower-extremity subtraction [53], end-stage renal disease, visual impairment, and myocardial infarction (MI), of any age-group. Even though aggregate numbers of persons with type 1 diabetes are alive into old age [54]. Older adults are at extraordinary threat for the progress of type 2 diabetes due to the united properties of cumulative insulin resistance and weakened pancreatic islet function with aging. Age-related insulin resistance looks to be largely linked with physical inactivity adiposity, and sarcopenia [55], which may somewhat explain the unequal realization of the concentrated lifestyle interference in older participants. Muscle mass and strength decline with age, and these decrements may be worsened by diabetes difficulties, comorbidities, and periods of hospitalization in older adults with diabetes. People with diabetes of lengthier period and those with advanced A1C have inferior muscle strength per unit of muscle mass than BMI- and age-accorded people without diabetes and than those whose disease is of smaller period or under improved glycemic control [56]. Though age and diabetes combine to diminish appropriateness and strength, physical activity interventions recover functional status in older adults [57] with and without diabetes. In older adults, even light-intensity physical activity is supplementary with advanced self rated physical health and psychosocial well-being [58].

CONCLUSION

Smoking surges diabetic prevalence and exaggerates glucose homeostasis. Smoking should be prevented in patients with diabetic. Therefore, patients should be knew the consequence of smoking on their disease and suggesting to them a plane or program for quitting.

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