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Original Article

Assessment of Obesity among Diabetic Patients Visited in Hospital: A Prospective Study

Anil Kumar Gupta
MD (General Medicine), Senior Consulted Physician,
MMG District Hospital, Ghaziabad, Uttar Pradesh, INDIA.

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***Correspondence to:**
Dr. Anil K Gupta, MD (General Medicine), Senior Consulted Physician, MMG District Hospital, Ghaziabad, Uttar Pradesh, INDIA.

ABSTRACT

Background: The influence of obesity on type 2 diabetes risk is determined not only by the degree of obesity but also by where fat accumulates. Increased upper body fat including visceral adiposity, as reflected in increased abdominal girth or waist-to-hip ratio, is associated with the metabolic syndrome, type 2 diabetes, and cardiovascular disease, although underlying mechanisms remain uncertain. Hence; we planned the present study to assess the presence of Obesity among Diabetic Patients.

Materials & Methods: The present study included evaluation of presence of obesity among diabetic patients. The study included recruitment of 100 type 2 diabetic patients who attended the department of endocrinology. Body mass index (BMI) of all the patients were recorded along with complete clinical and demographic details. All the details of the patients in accordance to the BMI group were recorded. Data and variables were recorded on excel sheet. All the results were analyzed by SPSS software.

Results: Mean weight of males was found to be 70.5 kg whereas mean weight of females was found to be 65.8 kg. Significant results were obtained while comparing the mean weight and BMI among males and females. According to the mean BMI values, both males and females with type 2 diabetes were found to be overweight.

Conclusion: Overweight and obesity are prevalent in considerable amount among type 2 diabetic patients, with significantly higher frequency in females.

KEYWORDS: Diabetes, Obesity, Overweight.

INTRODUCTION

The influence of obesity on type 2 diabetes risk is determined not only by the degree of obesity but also by where fat accumulates. Increased upper body fat including visceral adiposity, as reflected in increased abdominal girth or waist-to-hip ratio, is associated with the metabolic syndrome, type 2 diabetes, and cardiovascular disease, although underlying mechanisms remain uncertain. Whether subcutaneous fat lacks the pathological effects of visceral fat or is simply a more neutral storage location, for example, requires further study.[1-3] Beyond differences in body fat distribution, emerging evidence suggests that different subtypes of adipose tissue may be functionally distinct and affect glucose homeostasis differentially. Adult humans have limited and variable numbers of brown fat cells, which play a role in thermogenesis and potentially influence energy expenditure and obesity susceptibility.[4-6] BMI, abdominal fat distribution, and weight gain are important risk factors for the development of type 2 diabetes. It is estimated that 90% of individuals with type 2 diabetes are obese.[7,8] Hence; we planned the present study to assess the presence of Obesity among Diabetic Patients.

MATERIALS & METHODS

The present study was planned in the department of Medicine, MMG District Hospital, Ghaziabad, Uttar Pradesh (India) and included evaluation of presence of obesity among diabetic patients.

Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol.

The study included recruitment of 100 type 2 diabetic patients who attended the department of Medicine of the medical institute.

Exclusion criteria for the present study included:

- Patients with uncontrolled diabetes,
- Patients with type 1 diabetes,
- Patients beyond the age group of 25 to 60 years

Body mass index (BMI) of all the patients were recorded along with complete clinical and demographic details. Categorization of all the patients was done based on their BMI values, into following categories:

Normal weight: BMI value less than 25

Overweight: BMI value within range of 25 to 30

Obese: BMI value more than 30

All the details of the patients in accordance to the BMI group were recorded. Data and variables were recorded on excel sheet. All the results were analyzed by SPSS software. Student t test and univariate regression curves were used for evaluation of level of significance. P-value of less than 0.05 was taken as significant.

Table 1: Demographic details of the patients

Parameter	Value
Mean age (years)	48.2
Males	50
Females	50

Table 2: Comparison of physical details of males and females

Parameter	Males (n=50)	Females (n=50)	P-value
Mean weight (Kg)	70.5	65.8	0.02
Mean BMI (Kg/m2)	26.8	28.8	0.01

Table 3: Comparison of BMI groups in between males and females

Age group	Males		Females	
	n	Mean BMI (Kg/m2)	n	Mean BMI (Kg/m2)
25- 40 yrs	20	26.5	25	28.5
41- 50 yrs	10	27.2	12	29.4
51- 60 yrs	20	26.7	13	28.4

RESULTS

In the present study, we evaluated a total of 100 type 2 diabetic patients. Out of these 100, 50 were males and the remaining 50 were females. Mean age of the patients of the present study was 48.2 years. Mean weight of males was found to be 70.5 kg whereas mean weight of females was found to be 65.8 kg. Significant results were obtained while comparing the mean weight and BMI among males and females. According to the mean BMI values, both males and females with type 2 diabetes were found to be overweight.

DISCUSSION

In the present study, we observed that mean BMI of diabetic females was significantly higher in comparison to diabetic males. Daousi C et al determined the prevalence of overweight and obesity among patients with type 1 and type 2 diabetes mellitus attending a secondary care diabetes clinic in the United Kingdom, and to assess the impact of overweight and obesity on glycaemic control and cardiovascular risk factors in patients with type 2 diabetes. 3637 patients with diabetes were identified from the hospital electronic diabetes register, 916 with type 1 diabetes (mean (SD) age 40.4 (15.1) years, 496 male) and 2721 with type 2 diabetes (mean (SD) age 62.5 (11.8) years, 1436 male). Data on body mass index (BMI), glycaemic control, lipid profiles, and blood pressure were extracted. Of patients with type 1 diabetes, 55.3% were overweight (BMI ⩾25 kg/m2), 16.6% were obese (BMI ⩾30 kg/m2), and 0.4% had morbid obesity (BMI ⩾40 kg/m2). In contrast, 86% of patients with type 2 diabetes were overweight or obese, 52% were obese, and 8.1% had morbid obesity. Obese patients with type 2 diabetes were younger, had poorer glycaemic control, higher blood pressures, worse lipid profiles, and were more likely to be receiving antihypertensive and lipid lowering drugs compared with patients with BMI <30 kg/m2. Obesity is the rule among patients attending this hospital diabetes clinic, with 86% of those with type 2 diabetes overweight or obese.[9]

Williams KV et al assessed the prevalence and incidence of being overweight in type 1 diabetes, to identify factors associated with weight gain and improved glycemic control, and to examine relationships among weight gain, glycemic control, and cardiovascular risk factors. The prevalence and incidence of being overweight in the Pittsburgh Epidemiology of Diabetes Complications (EDC) cohort (n = 441) were compared with the general population (National Health and Nutrition Examination Survey [NHANES]). Factors associated with weight gain and improved glycemic control were identified, and relationships among weight gain, glycemic control, and cardiovascular risk factors were examined over a 6.9 +/- 2.2-year period. At baseline, the prevalence of being overweight (BMI > 27.8 kg/m2 for men and > 27.3 kg/m2 for women) was 10.4 and 11.4%, respectively, and was lower than the age- and sex-specific estimate for the general population (P < 0.05). The incidence of being overweight was comparable in men (12.6%) and women (11.8%) and did not differ from the general population (P = 0.98). Weight gain correlated with improvements in HbA1c (r = -0.21, P < 0.001). Patients with the highest baseline HbA1c levels gained the most weight and had the greatest improvement in glycemic control. A lower baseline BMI was also associated with a greater improvement in glycemic control. Weight gain favorably influenced the lipid profile in the setting of improved glycemic control, but adversely influenced the lipid profile in the absence of improved glycemic control. Weight change was directly associated with blood pressure change, but the incidence of hypertension was more strongly influenced

by the development of nephropathy. The prevalence of being overweight in type 1 diabetes remains lower than that in the general population. Moderate weight gain did not adversely affect the cardiovascular risk profile in the setting of improved glycemic control.[10] Comaschi M et al performed an observational, cross-sectional study aiming to assess multiple cardiovascular risk factors and metabolic control in a very large and representative sample of type 2 diabetic subjects attending diabetes outpatient clinics (DOCs) in Italy. Two hundred and sixty-one clinics were involved, representing about one-third of the whole number of DOCs in the Country. Each clinic recruited on a random basis from 50 to 100 type 2 diabetic patients aged 35-70 years, diagnosed more than six months before the start of the study. Demographic and clinical data were collected and blood pressure, lipids, HbA(1c), fasting blood glucose (FBG), and microalbuminuria were measured. Overall, 12,222 type 2 diabetic patients were recruited in 253 DOCs. Female subjects showed higher FBG, HbA 1c, blood pressure, lipid levels, and a longer duration of disease. The proportion of patients with BMI > or = 30 was 33.3% among males and 45.9% among females; 40.9% of male patients had a waist circumference greater than 102 cm, while 79% of female patients had a waist circumference over 88 cm. More than two-third of the patients (74.4%) had systolic blood pressure values of > or = 130 mmHg, and one-third (33.2%) had diastolic values > or = 85 mmHg. The mean value of HbA(1c) was 7.6+/-1.6, and 23.7% of the observed population had an HbA 1c level > 8.5%. More than half of the study population had total cholesterol levels > or = 5.2 mmol/l, 47% had LDL cholesterol values of 3.3 mmol/l or greater and 9.6% had HDL cholesterol level lower than 0.90 mmol/l. The presence of multiple lipid alterations was associated with markedly higher HbA 1c levels, in both subjects treated with lipid lowering drugs and untreated subjects. Finally, even moderate increases in HbA 1c levels (i.e. HbA 1c > 7.5%) were associated with a statistically significant greater risk of systolic blood pressure levels > or = 160 mmHg in women (OR = 1.40; 95% CI 1.09-1.80) but not in men (OR = 1.21; 95% CI 0.96-1.54). The SFIDA study provides a clear indication of the need to orient diabetes care towards the control of global cardiovascular risk.[11]

CONCLUSION

Overweight and obesity are prevalent in considerable amount among type 2 diabetic patients, with significantly higher frequency in females. However; future studies are recommended.

REFERENCES

1. Hamadeh RR. Noncommunicable diseases among the Bahraini population: a review. East Mediterr Health J. 2000;6(5-6):1091–7.
2. Al-Lawati JA, Al Riyami AM, Mohammed AJ, Jousilahti P. Increasing prevalence of diabetes mellitus in Oman. Diabet Med. 2002;19(11):954–7.
3. Larson-Meyer DE, Newcomer BR, Ravussin E, et al. Intrahepatic and intramyocellular lipids are determinants of insulin resistance in prepubertal children. Diabetologia 2011;54:869–875.
4. Musaiger AO. Overweight and obesity in eastern mediterranean region: prevalence and possible causes. J Obes. 2011;2011:407237.
5. Al-Daghri NM, Al-Attas OS, Alokail MS, Alkharfy KM, Yousef M, Sabico SL, et al. Diabetes mellitus type 2 and other chronic non-communicable diseases in the central region, Saudi Arabia (Riyadh cohort 2): a decade of an epidemic. BMC Med. 2011;9:76.
6. Zimmet P, Alberti KG, Shaw J. Global and societal implications of the diabetes epidemic. Nature. 2001;414(6865):782–7.
7. Frontini A, Cinti S. Distribution and development of brown adipocytes in the murine and human adipose organ. Cell Metab 2010;11:253–256.
8. Bournat JC, Brown CW. Mitochondrial dysfunction in obesity. Curr Opin Endocrinol Diabetes Obes 2010;17:446–452.
9. Daousi C, Casson IF, Gill GV, MacFarlane IA, Wilding JPH, Pinkney JH. Prevalence of obesity in type 2 diabetes in secondary care: association with cardiovascular risk factors. Postgraduate Medical Journal. 2006; 82 (966): 280-284. doi:10.1136/pmj.2005.039032.
10. Williams KV1, Erbey JR, Becker D, Orchard TJ. Improved glycemic control reduces the impact of weight gain on cardiovascular risk factors in type 1 diabetes. The Epidemiology of Diabetes Complications Study. Diabetes Care. 1999 Jul;22(7):1084-91.
11. Comaschi M1, Coscelli C, Cucinotta D, Malini P, Manzato E, Nicolucci A; SFIDA Study Group--Italian Association of Diabetologists (AMD). Cardiovascular risk factors and metabolic control in type 2 diabetic subjects attending outpatient clinics in Italy: the SFIDA (survey of risk factors in Italian diabetic subjects by AMD) study. Nutr Metab Cardiovasc Dis. 2005 Jun;15(3):204-11.

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