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ASSOCIATION BETWEEN INSULIN RESISTANCE AND MEASUREMENT OF PHYSICAL ACTIVITY IN OLDER ADULTS WITH DIABETES MELLITUS

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Abstract:

Introduction: *Epidemiological studies have consistently shown that higher levels of light and moderate-to-vigorous physical activity (MVPA) are related to lower prevalence and incidence of several chronic diseases, including metabolic and cardiovascular disease.*

Aims and Objectives: *The basic aim of the study is to analyze the association between insulin resistance and measurement of physical activity in older adults with diabetes mellitus.*

Methodology of the study: *The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. After approval by the hospital ethical review committee, informed written consent was taken from the patients prior to inclusion in the study. Patients from both genders, age range 35 to 65 was selected for this study. The pre devised proforma was completed by single researcher endorsing subject's demography, and clinical profile.*

Results: *The data was collected from 100 patients. The demographic values shows that there is a significant relation between diabetes and hyperlipidemia in a local population of Pakistan. The value of HbA1C is 5.77 ± 0.50 in diabetic patients as compared to normal group. We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes.*

Conclusion: *It is concluded that systematic screening of postprandial GMD is the best way to get an early diagnosis and prevent diabetes-related complications. Furthermore, aging is characterized by high prevalence of associated co-morbidities and risk of frailty.*

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INTRODUCTION:

Epidemiological studies have consistently shown that higher levels of light and moderate-to-vigorous physical activity (MVPA) are related to lower prevalence and incidence of several chronic diseases, including metabolic and cardiovascular disease. Diabetes mellitus (DM) has been emerging as a major healthcare problem in Pakistan with 7.0 million people suffering from it and the number of diabetic patients is estimated to rise to a staggering figure of 14.4 million by the year 2040 making Pakistan the 8th highest country in the world in terms of burden of diabetic patients [1].

The aging population is growing worldwide and the proportion of people above 60 years old accounts for 15% of the whole population which is estimated to 7.5 billion. In general, 20% of old people have DM, and a similar proportion have undiagnosed DM. Reported frequencies vary from 18% to 33% [2]. This range may reflect differences in the age, life style, and genetic background of the analyzed populations. On another hand, 30% of old people have impaired glucose regulation which means an increased risk for DM. Actually, DM in elderly includes two groups: "survivors" of young or middle age onset of diabetes, and incident diabetes in older age or type 2 DM [3]. Type 1 DM is exceptional in elderly as auto immune diseases affect young populations. So old people with type 1 DM are practically at the end stage of their disease and are multi complicated. Most people over than 60 years old suffer from type 2 DM due to insulin resistance. However, insulin secretion may be severely reduced at the end stage of type 2 DM [4].

Insulin resistance is the major finding in several metabolic disorders, including type 2 diabetes, metabolic syndrome, dyslipidemia, and hypertension. Homeostasis model assessment (HOMA) was proposed as a simple and inexpensive technique to evaluate insulin resistance in vivo. Although the HOMA-IR has been widely used for the study of insulin resistance, the threshold value for insulin resistance has not been conclusive [5].

AIMS AND OBJECTIVES:

The basic aim of the study is to analyze the association between insulin resistance and measurement of physical activity in older adults with diabetes mellitus.

METHODOLOGY OF THE STUDY:

The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. After approval by the hospital ethical review committee, informed written consent was taken from the patients prior to inclusion in the study. Patients from both genders, age range 35 to 65 was selected for this study. The pre devised proforma was completed by single researcher endorsing subject's demography, and clinical profile. Fasting plasma glucose, serum TC, HDL-C, LDL-C, TG and insulin resistance was measured by using Randox kit.

STATISTICAL ANALYSIS:

SPSS 17.0 for windows was used for statistical analysis. Descriptive statistics i.e. mean ± standard deviation for quantitative values and frequencies along with percentages for qualitative variables were used to describe the data.

RESULTS:

The data was collected from 100 patients. The demographic values shows that there is a significant relation between diabetes and hyperlipidemia in a local population of Pakistan. The value of HbA1C is 5.77 ± 0.50 in diabetic patients as compared to normal group. We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes.

Table 01: Lipid sub fraction values among subgroups.

Lipid Profile	Diseased group	P value
Serum Cholesterol (mg/dl)	187.26 ± 17.46	< 0.01
Serum LDL-C (mg/dl)	92.59 ± 11.53	< 0.01
Serum HDL-C (mg/dl)	45.63 ± 4.44	< 0.01
Serum TG (mg/dl)	169.28 ± 9.83	< 0.01

DISCUSSION:

Physical inactivity is an independent risk factor for chronic diseases which is estimated to cause 1.9 million deaths, globally. Moreover, physical inactivity is considered as the fourth leading risk factor for global mortality causing an estimated 3.2 million annual deaths (6% of global deaths). Physical activity (PA) decreases the risk for premature death, coronary artery disease, obesity, diabetes, hypertension (HTN), cancer and depression thereby lowering medical and medication costs and improving quality of life [6]. The fact that the lack of PA and MetS is cardiovascular risk factors that increase overall morbidity makes the study of their interrelationships extremely important. Moreover, low levels of PA are strongly associated with the development of MetS and chronic diseases [7].

Actually, the quality of life has already improved considerably in patients taking one or two daily doses of intermediate insulin. However, before beginning insulin therapy, it is important to assess whether or not the patient is physically and especially cognitively able to use insulin. If a patient is capable of drawing up his insulin, knows to use an insulin pen, is able to decide for an appropriate insulin dose, knows how to monitor properly his blood glucose, and recognizes and treats his hypoglycemia, insulin is a very good alternative [5]. However, for older patients taking a fixed daily dose of insulin, capable of giving the insulin shot, but not drawing it up because of visual problems or another cause, a family member or a pharmacist may prepare a week's supply of insulin in syringes and leave them in the refrigerator [8]. Such a plan may allow an older patient to remain living independently at home, especially in-developed countries where people are used to live on their own [9]. This problem is not a major one in developing countries as most old people live with their family. For example, in North Africa, a survey showed only 2.6% of old people live on their own [10].

CONCLUSION:

It is concluded that systematic screening of postprandial GMD is the best way to get an early diagnosis and prevent diabetes-related complications. Furthermore, aging is characterized by high prevalence of associated co-morbidities and risk of frailty.

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