HYPER CHELOSTROLEMIA AS A RISK FACTOR FOR TYPE 2 DIABETIC RETINOPATHY.

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Abstract:

Introduction: Diabetes mellitus encompasses a family of disorders of carbohydrate metabolism that are characterized by hyperglycemia in the development of long-term macro vascular, micro vascular and neuropathic complication.

Methodology: A retrospective study was done in diabetic clinic attached with medical unit-ill (Ward 7), JPMC, Karachi. 100 consecutive patients between the ages of 40-70 years, who attended the diabetic clinic with type 2 Diabetes between Decembers 2002 to April 2003 had a Funduscopic examination to see the presence of diabetic retinopathy. Lipid profile was done to see the correlation between hypercholesterolemia, hypertriglyceridemia, raised LDL and raised HDL and diabetic nephropathy. SPSS version 10 was used to see the statistic correlation, evaluated by relative risk and linear regression and correlation analyzed.

Results: Statistically significant positive correlation was found of diabetic retinopathy with hypercholesterolemia, hypertriglyceridemia and raised LDL and statistically significant negative correlation was found between diabetic retinopathy and raised HDL.

Conclusion: In diabetic patients, hypercholesterolemia, hypertriglyceridemia and raised LDL predispose to retinopathy and raised HDL prevents against diabetic retinopathy.

Keywords: Diabetes Retinopathy, hypercholesterolemia, hypertriglyceridemia, LDL, HDL.

Introduction:

Diabetes mellitus encompasses a family of disorders of carbohydrate metabolism that are characterized by hyperglycemia in the development of long-term macro vascular, micro vascular and neuropathic complication[1] It effects more than 120 million people work wide, and itis estimated that it will effect220million by the year2020. Pakistan has an estimated number of 7 million diabetics in the page group of 25 years and above and another 6 million are suffering from impaired glucose tolerance. Currently Pakistan is 8th in the world according WHO estimation of prevalence of diabetes and by the year 2025 is expected to rise to the 4th position[2]. In Pakistan various studies have reported between 5-7 %prevalence of diabetes mellitus, with diabetic[3-11]. Diabetes mellitus encompasses a family of disorders of carbohydrate metabolism that are characterized by hyperglycemia in the development of long-term macro vascular, micro vascular and neuropathic complication.

Methodology:

A retrospective study was done in diabetic clinic attached with mdica1 unit-ill (Ward 7), JPMC, Karachi..100consecutive patients between the ages of 40-70 years, who attended the diabetic clinic between Decembers 2002 to April 2003 with type 2 diabetes, had a Fundoscopic examination to see the presence of diabetic retinopathy (Group A) or its absence (Group B). Lipid profile was done to see the correlation between hypercholesterolemia, hypertriglyceridemia, raised LDL and raised HDL and diabetic nephropathy. Additionally following investigations were done on all patients.

· Fasting blood sugar
· Random blood sugar
· HbAlc

Inclusion criteria included:

· Known cases of type2 diabetes with DR.
· Known cases of type2 diabetes without DR.
· Age between 4O-7Oyears.
· Patient of both sexes were selected.

Exclusion criteria included:

Type1 diabetes.
Known cases of familial hypercholesterolemia.

Analysis:

On the basis of already filled Performa, a database was developed on SPSS ver. 10.0 for windows. The comparison of two groups was done by student, t-test of proportion. Also correlation of hypercholesterolemia to diabetic retinopathy was evaluated by relative risk and linear regression and correlation analyzed.

Results:

The mean age in group A patients was 52+7 years and in group B the mean age was 5l+8(p=NS). The mean

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duration of diabetes in group A was 9+4 years compared with 7+4 years (p=NS) are almost similar. The mean of BMI in group A is 26+1 compared to the mean of BMI in group B is 26+2 are almost similar. Fasting blood sugar and HbAlc when compared in both groups it is found that there is no much difference (mean of PBS 188+67 and HbAlc 7+0.9).

In lipid profiles there was marked difference of mean in two groups. In group A the mean level of cholesterol, triglyceride and LDL were higher than group B.

Group A:

Serum cholesterol means 223+45 mg/dl
Serum triglycerides mean 238+104 mg/dl
Serums LDL mean 145+29 mg/dl
Serums HDL mean 44+7 mg/dl

Group B:

Serum cholesterol means 204+36 mg/dl
Serum triglycerides mean 183+78 mg/dl
Serums LDL mean 126+34 mg/dl
Serums HDL mean 43+9 mg/dl

Discussion:

We analyzed our study and found that hypercholesterolemia has got a significant association with diabetic retinopathy. In addition to the same, we also found serum triglyceride. Serum LDL and duration of diabetes have got a positive correlation with diabetic retinopathy.

Studies have found that there is positive correlation of diabetic retinopathy with elevated serum level of triglyceride, cholesterol, and LDL [1].

Another study of 500 patients have studied correlation of diabetic retinopathy with various risk factors in his study where diabetic retinopathy was correlated with serum cholesterol (p-<O.OOOI), serum triglyceride (p-<O.OOOI) and duration of diabetic (p<0.0001>, there was a strong positive correlation. When correlation was sought with age. (p-O.OO6), and FPG(p-<O.OO2) a positive correlation, was found[12].

In our study which was done on 100 patients the correlation of diabetic retinopathy with serum cholesterol <p-0.02,cl-35to-2), serum triglyceride (p<O.04,-9Oto-17), serum LDL (p-<O.005,cl-3lto-5) and duration of diabetic (p<O.01,c1-3to-0.3). When we correlated diabetic retinopathy with age and serum FBS it was found insignificant.

When compared, our study proves the same point as these two studies have proven that there is positive correlation of diabetic retinopathy with serum cholesterol, triglyceride, LDL, and duration of diabetes.

Conclusion:

This study suggests that hypercholesterolemia has got a significant association with diabetic retinopathy. Duration of diabetes, hypercholesterolemia, hypertriglyceridemia and raised LDL predispose to retinopathy and raised IIDL prevents against diabetic retinopathy. We recommend that further studies should be done to assess that effect of lipid lowering agents in delaying the progression or prevention of diabetic retinopathy.

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