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# PREVALENCE OF CORONARY RISK FACTORS IN TYPE -2 DIABETES: HOSPITAL BASED STUDY

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***Abstract***
***Introduction:*** *Diabetes is one of the risk factor for coronary heart disease. In the recent report of multinational study WHO concluded that 50% mortality in diabetic population is due to vascular diseases of which as high as 34% is due to coronary artery diseases (CAD).*
***Aim:*** *to identify risk factors for occurrence of coronary artery disease among type -2 Diabetics.*
***Setting and Design****: Cross sectional study involving 100 type 2 diabetic patients attending diabetic clinic and admitted in Inlaks and Budhrani Hosptal, Pune from January2001 to June 2001.*
*Inclusion criteria: only known type 2 diabetic cases already on treatment and without any H/o ketosis or congestive heart failure.*
***Exclusion criteria****: Newly diagnosed cases of diabetes; Type 1 Diabetic cases.*
***Result:*** *Out of hundred study population 45 were male and 55 were female, age ranging from 45-80. Mean age of patients was 57.13. Prevalence of CAD was 23% among study population. HDL level was found to be low in CHD patients of both sexes. Central obesity was found to be prevalent in female patients. We found significant difference in post prandial BSL in CHD and non CHD patients.*
***Conclusion:*** *1. Prevalence of CAD was 23% among study population. 2central obesity found more among female than male. 3. HDL level was found to be low in CHD patients of both sexes.*

***Key Words: Prevalence, Risk Factors, Coronary Artery Disease.***

**Abbreviations**
BMI: Body Mass Index.
CAD: Coronary Artery Disease.
CHD: Coronary Heart Disease.
CI: Confidence Interval.
DM: Diabetes Mellitus.
Gly. Hb: Glycated Haemoglobin.
HDL: High Density Lipoprotein.
LDL: Low Density Lipoprotein.
NIDDM: Non-Insulin Dependent Diabetes Mellitus.
TG: Triglycerides.
VLDL: Very Low Density Lipoprotein.

## INTRODUCTION

Diabetes Mellitus is one of the most common metabolic disorders, characterized by metabolic abnormalities and long term complications involving eyes, heart, kidney, nerves and blood vessels. Diabetics are prone for numerous long-term complications such as nephropathy, retinopathy, neuropathy and CHD.[1]

Diabetes is one of the risk factor for coronary heart disease. In the recent report of multinational study WHO concluded that 50% mortality in diabetic population is due to vascular diseases of which as high as 34% is due to coronary artery diseases (CAD). With a closer look it was noted that prevalence of CAD risk factors is higher in diabetics than general population. [2,3] CHD in diabetics assumes a special importance in that the disease is more severe, results in increased incidence of complication and has higher mortality than CHD in general population. [4]

Present study was carried out to know prevalence of coronary risk factors in type 2 diabetes.

**MATERIAL AND METHODS**

**Study Design:** Cross sectional study involving 100 type 2 diabetic patients attending diabetic clinic and admitted from January2001 to June 2001.

**Inclusion criteria:** only known type 2 diabetic cases already on treatment and without any H/o ketosis or congestive heart failure.

**Exclusion criteria:** Newly diagnosed cases of diabetes; Type 1 Diabetic cases.

**RESULT**

Table 1 showed characteristic features of study population. Out of hundred study population 45 were male and 55 were female, age ranging from 45-80. Mean age of patients was 57.13.

Thirty three cases had family history of coronary heart disease. 68 were hypertensive and 32 had normal blood pressure. Twenty three out of 100 were detected to be having CHD i.e. prevalence was 23%.

We found that high level of total cholesterol, LDL, VLDL and low HDL level among hypertensive patients.
HDL level was found to be low in CHD patients of both sexes.

Central obesity was found to be prevalent in female patients. Significant association between obesity and CHD was found statistically (chi square test, p value <0.05 at CI 95%).

The mean duration of diabetes was found to be 6.53 years. In male patients without CHD mean duration of DM was 4.9$\pm$ 2.2 years and with CHD it was 9.8$\pm$5.5 years.

In female patients without CHD mean duration of DM was 6.5$\pm$ 3.3 years and with CHD it was8.3$\pm$3.2 years. When multiple logistic regressions were applied it showed significant correlation regarding duration of DM and CHD. (p value=0.0009).

**DISCUSSION**

Coronary Heart Disease has emerged as the major cause of mortality in most countries. In India CHD accounts for 10-15% of all cardiovascular disease. [5] Many factors such as smoking, hypertension, old age, male sex, high cholesterol, hyperuricaemia, DM and stress have been implicated in etiology of this disease.[6]

In our study we found prevalence of CHD among type 2 DM patients to be 23% various studies in India have reported widely variable prevalence of CHD in diabetes- 6.6 to 33. [7-10]

**Obesity and CHD**

Central obesity is related to insulin resistance, hyperlipidemia and hypertension. Central obesity is more frequently observed in Type 2 DM [11], our study found BMI >25 $Kg/M^2$ in among 58 cases out of which 42 were female patients. Central obesity was found to be more prevalent among female patients.

**Duration of DM and CHD**

The mean duration of diabetes was found to be 6.53 years, When multiple logistic regression was applied it showed significant correlation regarding duration of DM and CHD. (p value=0.0009). Ramachandran A. et al. have documented significant correlation between duration of DM and CHD [12]

**Lipid abnormalities in DM**

In our study we found high cholesterol level in 43% cases, Low HDL level in 45% cases and high triglyceride level in 59% cases. Some Indian studies have documented association between diabetes and lipid abnormalities. [13,14]

**Hyperglycaemia and CHD**

Several studies have shown strong correlation between post prandial glycaemia and macrovascular complications. [15-18] In our study also we found mean post prandial sugar level of 223.2+ 57.35 in CHD patients. We found significant difference in post prandial BSL in CHD and non CHD patients.

**Hypertension and CHD**

The correlation of hypertension and CHD is controversial; some of studies show significant correlation while others failed, [19-22] in our study we found 68% hypertensive patients. They showed significantly high mean values of total cholesterol, VLDL, LDL, TG and glycated Hb.

**REFERENCES**

1. Daniel Foster: On Diabetes Mellitus in Harrison's Principle of Internal Medicine, 11th Edition, 1779-1797
2. Enas E A,Yusuf S, Mehta J L Prevalence of coronary artery disease in Asian Indians. Am J Cardiol 1992;70:945-949
3. Fuster V, adimon L, Badimon J J, Chesebro J H Mechanism of diseases. The pathogenic of coronary artery syndrome. NEJM1992;326:242-250,310-318
4. Gracia M J, Mc Namara P M, Gordon T, Kannell W B Morbidity and mortality in diabetics in Framingham population. Sixteen year follow up. Diabetes 197;23:105-111
5. Park J.E. & Park K Cardiovascular disease, text book of preventive and social medicine 12th ed. Jabalpur 1983,Bhanot publication
6. June Hsieh Wuet et al coronary artery disease risk predicted by plasma concentrations of HDL cholesterol, Apo-lipoprotein A, Apo-lipoprotein B and Lra, in general Chinese population Clin chem.. 1993;39/2:209
7. Walia M,Agrawal A K, Shah P, Yadav R,Singh,C P,Yadav P. Prevalence of CHD in type-2 DM JAPI1999;47/11
8. Am. J. Manaj care 2000 June 6 (6):681-
9. QJM 1998 June 91(6):439-
10. Int. J. Cardiol. 1998 Sept 66(1): 65-72
11. Yajnik C S, Naik S S, Bhat D S et al: The relationship between obesity, plasma immunoreactive insulin concentration and blood pressure in newly diagnosed Indian type 2 dibetic patients. Diabetic Med 1993;10:146-51
12. Ramachandran A Snehalata v, vijay, Vishwanathan M: Vascular complication of diabetes and cardiovascular risk factors in Indians NNDV-Novo Nordisk Diabetes Update Feb1995; 17-19:59-62
13. Gupta et al: Jr. of diabetic association of India.1979; 19:149-153
14. Jain et al: Jr. of diabetic association of India.1980;20:29-34
15. Fuller J H, Shipley M J, Rose G et al: coronary heart disease risk and impaired glucose tolerance. The white hall study. Lancet 1980;1:1373-1376
16. Donahue R P, Abbot R D, Reed D M, et al: Honolulu heart program diabetes 1987;36:689-692
17. Hanefeld M, Temelkova –Kurktschiev T: The post prandial state and the risk of atherosclerosis. Diabetes Med 1997;14:6-11
18. Jackson C A, Yudkin J S, Forest R D: Comparison of relationship of glucose tolerance test and glycatd haemoglobin assay with diabetic vascular disease in the community. The Islington diabetes survey. Diabetes res. Clin. Pract.1992;17:111-123
19. Gall M A, Borch Johnsen K, Houguard P et al: Albuminuria and poor glycemic control predict mortality in NIDDM. Diabetes 1995;44:1303-1309
20. Walter D P, Gatting W, Houston A C et al: mortality in diabetic subjects and eleven year follow up of a community based population. Diabetec Med. 1994;11:968-73
21. Kusisto J et al: NIDDM and its metabolic control predict coronary heart disease in elderly subjects. Diabetes 1994;43:960
22. Uusitupa M I, Ostrander L D,Carman W J, et al: ten years cardiovascular mortality in relation to risk factor and abnormalities in lipoprotein composition in type 2 diabetic and non diabetic subjects. Diabetologia 1993;36:1175-84

**Tables**

**Table 1: Characteristic features of study group**

| Characteristic features | Male | Female |
|---|---|---|
| | n=45 | n=55 |
| Age (mean) | 58.2 | 56.07 |
| Duration of DM (mean) | 6.24 | 6.83 |
| Family history (n, %) | 12(26.7) | 21(38.2) |
| BMI >25 (n,%) | 16(35.6) | 42(76.4) |

| | | |
|---|---|---|
| Overweight (n,%) | 14(31.1%) | 40(72.7) |
| WHR (mean) | 0.93 | 0.88 |
| Systolic BP (Mean) | 139.7 | 141.53 |
| Diastolic BP (Mean) | 87.6 | 87.7 |
| BSL F(Mean) | 164.04 | 169.4 |
| BSL PP (Mean) | 207.24 | 219.5 |
| Gly. Hb (Mean) | 8.5 | 8.5 |
| Total Cholesterol(Mean) | 196.6 | 196.9 |
| HDL Cholesterol(Mean) | 41.4 | 41.7 |
| VLDL Cholesterol(Mean) | 38.5 | 38.8 |
| LDL Cholesterol(Mean) | 116.2 | 116.2 |
| TG Cholesterol(Mean) | 194 | 194.2 |

**Table 2: Comparison of smoking and HTN with CHD and Non CHD**

| Variables | CHD | Non CHD | Total |
|---|---|---|---|
| Smoker | 9(36%) | 16(64%) | 25 |
| non smoker | 14 (23%) | 61(71%) | 75 |
| Total | 25 | 75 | 100 |
| HTN | 21 | 47 | 68 |
| Non HTN | 2 | 30 | 32 |
| Total | 23 | 77 | 100 |

**Table 3: Comparison of lipid profile with and without CHD**

| Lipid Profile | without CHD | | With CHD | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| Total Cholesterol>=200 | 13(16.9) | 23(29.9) | 7(30.4) | 5(21.7) |
| HDL Cholesterol<=40 | 20(26) | 21(27.3) | 9(39.1) | 6(7.8) |
| LDL Cholesterol >=140 | 4(5.1) | 6(7.8) | 3(13) | 3(13) |
| TG Cholesterol >=150 | 15(19.5) | 30(39) | 11(47.8) | 8(34.8) |

**Table4: Comparison of lipid profile, WHR and Gly. Hb in Hypertensive and Non Hypertensive**

| | HTN (68) | Non HTN (32) |
|---|---|---|
| Total Cholesterol(Mean) | 203.6 | 182.3 |
| HDL Cholesterol(Mean) | 39.5 | 45.9 |
| VLDL Cholesterol(Mean) | 42.5 | 30.4 |
| LDL Cholesterol(Mean) | 121.6 | 104.7 |
| TG Cholesterol(Mean) | 121.9 | 154.2 |
| WHR (Mean) | 0.9 | 0.89 |
| Gly. Hb (Mean) | 8.9 | 7.71 |