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A Study of Coronary Artery Heart Disease in Type 2 Diabetic Women

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Abstract:*In view of increasing incidence of coronary heart disease in type II diabetes women , a study was conducted to analysis the incidence, relationship, association and severity of coronary heart disease in diabetes women and having other risk factors in a territory care hospital in Coimbatore. Study was done with random selection of 100 patients over a period of 6 months in a territory care hospital. As a result women with diabetes and other risk factors like dyslipedimia hypertension are more risk and prone to develop coronary heart disease*

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I. Introduction

The incidence of coronary artery disease in women is less when compared to male. But the incidence of coronary artery disease in women with diabetics and non diabetic women varies . So in my study effect of diabetes and other risk factors on coronary heart disease were studied over a period of one year in a territory care hospital

AIMS OF THE STUDY

1. To study the incidence of Coronary Artery heart disease and hypertension in Type II diabetic women
2. To assess the relationship between the duration of diabetes mellitus and its complications.
3. To assess the association between the severity of diabetes mellitus and its complications.
4. To assess the role played by risk factors viz., hypertension, obesity and hyperlipidemia in increase the risk of coronary heart disease in diabetic women.

II. Material And Methods

The present study spans over a period of 6 months from March 2017 to April 2018.
A total of 100 cases are included in the present study.
All are women diabetics who attended our medical OPD, diabetology clinics and medical wards
They were examined clinically and investigated as per the following proforma :

STUDY OF ISCHAEMIC HEART DISEASE IN DIABETIC WOMEN

1. Patient particulars like Name, Age, Sex,Occupation,Height, Weigh, BMI, WHR, Inpatient number were obtained
2. Clinical data and history regarding Diabetes mellitus
3. Clinical data and history regarding ischemic heart disease
4. History of risk factors obtained
5. Past history and family history regarding diabetes, hypertension and other risk factors and co morbid conditions were obtained.
6. General examination, vitals and proper systemic examination regarding cardiovascular respiratory abdomen and central nervous system were done in all patients
7. Routine basic investigation and specific investigation regarding diabetes and coronary heart disease were done

III. Analysis Of Results

A. Analysis of the various types of cardiovascular complications in diabetic women.

In the present study 100 diabetic women were analysed of which 60 women are in the post menopausal age group. 40 women are in the premenopausal age group. 35 women had evidence of ischaemic heart disease out of the 100 diabetic women. 50 women had systemic hypertension.

The Analysis of the 100 patients threw up the following results.

1. Number of patients with Ischaemic Heart disease (Excluding Myocardial Infarction) 27
2. Number of patients with Myocardial Infarction 9
3. Number of patients with Hypertension without associated coronary insufficiency 36
4. Number of patients with Hypertension with associated I H D14
5. Number of patients with congestive Heart failure without associated coronary insufficiency 1
6. Number of patients with conduction defects without associated coronary heart disease or hypertension 2
7. Diabetic patients without cardiac disease (Systemic hypertension, IHD) 47

TABLE – 1
VARIOUS TYPES OF CARDIOVASCULAR COMPLICATIONS – AN ANALYSIS

S. NO	TYPE OF COMPLICATIONS	ASSOCIATED FEATURES	NO. OF PATIENTS	PERCENTAGE
1.	Ischaemic Heart Disease (without Myocardial infarction)	Hypertension Conduction defects Ventricular extrasystoles None	10 2 3 12	
TOTAL			27	27
2.	Myocardial Infarction	Hypertension CCF Conduction defects None	4 3 2 2	
TOTAL			9	9
3.	Hypertension Alone		36	36
4.	Congestive heart failure		1	1
5.	Conduction Defects alone		2	2
TOTAL			53	

Further analysis of myocardial infarction

The 9 patients with myocardial infarction were analysed further

The incidence of myocardial infarction was : 9%

The ***duration*** of myocardial infarction i.e. either acute or old was analysed

Acute myocardial Infarction : 6

Old myocardial Infarction : 3

The ***site wise*** analysis of myocardial infarction revealed the following results.

Anterior wall : 3

Anteroseptal : 3

Inferior wall : 2

Anterior and inferior wall : 1

Of the 9 cases of myocardial infarction studied, 3 cases were complicated by congestive cardiac failure.

B. Age distribution – An Analysis

Among the 36 patients studied, the age incidence was highest in the 51 to 60 years age group (41.6%). This was followed by 27.7% in the 41 to 50 years age group. The percentage in the 61 to 70 years age group was 19.4% and 5.5% in the 31 to 40 years age group

TABLE – II

AGE GROUP	NUMBER OF PATIENTS	PERCENTAGE
21-30	0	-
31-40	2	5.5%
41-50	10	27.7%
51-60	15	41.6%
61-70	7	19.4%
71-80	2	5.5%
TOTAL	36	

C. Incidence in premenopausal women Vs postmenopausal women – Analysis

There were 60 post menopausal and 40 premenopausal women in the present study. 10 premenopausal women has IHD. 26 postmenopausal women had evidence of IHD. The incidence of IHD in premenopausal women is 25%. The incidence in post menopausal women is 43.3%

TABLE - III

S no	GROUP	TOTAL NUMBER OF PATIENTS	NUMBER OF PATIENTS AFFECTED	PERCENTAGE
1.	Premenopausal Group	40	10	25
2.	Postmenopausal Group	60	26	45.3

D. Weight – Height ratio (BMI) – An Analysis

In the study concerned, the height and weight of all the patients were recorded. Body Mass index (BMI) was calculated by dividing weight in (kg) by height (in m2), BMI of 18-25 was considered to be normal. If her BMI is the range of 25.1 to 29.9, it is considered overweight and obese if more than 30. BMI of less than 18 puts the patient in underweight category.

In the present study of the 36 patients analysed who had evidence of ischaemic heart disease, the following results were obtained.

10 patients were obese : 16 were of normal weight category and 10 patients were underweight. This gives the following incidence.

TABLE IV

S.No	Class	No.of patients	Percentage
1.	Obese	10	27.8
2.	Normal weight	16	44.4
3.	Under weight	10	27.8

E. Waist Hip Ratio (WHR) – an analysis

The waist circumference is the minimum circumference measured between the costal margin and iliac crest and hip circumference is measured over the buttocks. WHR more than 0.8 in females is taken as abnormal. In the present study 72.2% patients with IHD had WHR of more than 0.8% of the hypertensive diabetic patients. 64% had WHR of more than 0.8%

S. No	CATEGORY	NO. OF PATIENTS WITH IHD	PERCENTAGE
1.	Patients with WHR <0.8	10	27.8
2.	Patients with WHR >0.8	26	72.2

F. Occupation and Physical Activity – Analysis

The patients were classified under three headings (Refer Table V)

a. Manual Labourers
b. Occupation involving moderate activity
c. Sedantary workers

TABLE V

S. No	Classification	No. of Patients	Percentage
1.	Manual Labourers	8	22.2
2.	Patients with Occupation involving moderate activity	10	27.7
3.	Sedantary workers	18	50

Thus the highest incidence of IHD is seen in sedentary workers (50%). The incidence is least (22%) in manual labourers.

G. Hypertension

Among the 100 patients, 50 were hypertensives and 50 were normotensives. The incidence is 50% of the 50 patients, 36 patients had hypertension without any evidence of coronary heart disease. 14 patients had IHD. An analysis of hypertensives is given in Table VI

TABLE VI

AGE GROUP (IN YEARS)	NUMBER OF PATIENTS	PERCENTAGE
32-40	5	10
41-50	9	18
51-60	18	36
61-70	12	24
ABOVE 70	6	12

The largest number of hypertensives were in the age group of 51 - 60 years (36%) followed by 61 – 70 age group

H. Glycemic Status

The correlation between the postprandial blood sugar levels and the incidence of Coronary heart disease was studied (Refer Table VII)

TABLE VII

POSTPRANDIAL BLOOD SUGAR (in mg/dl)	NUMBER OF PATIENTS	PERCENTAGE
150-200	4	11.1
201-250	9	25
251-300	10	27.7
301-350	8	22.2
351-400	2	5.5
401-450	2	5.5
ABOVE 450	1	2.7

There is a maximum incidence of IHD in the postprandial blood sugar range of 251-350 mg/dL (49.9%)

1. Duration of Diabetes and its correlation to the incidence of Ischaemic Heart Disease

Of the 36 cases studied, the maximum number of cases occurred when the duration of diabetes was 11-15 years (16 cases followed by 10 cases in the duration of 6 – 10 years)

TABLE – VIII

S. No	DURATION OF DIABETES (IN YEARS)	NO. OF CASES OF CAHD	PERCENTAGE
1.	Less than 5	3	8.3
2.	5 – 10	10	27.7
3.	11 – 15	16	44.4
4.	16 – 20	7	19.4

I. Serum Cholestrol

In the study, serum cholesterol levels were found to be raised in 20 patients out of 36 studied. OF the 20 patients with increased serum cholesterol, 9 patients were obese, 6 patients were over weight and 5 patients were under weight. The incidence of CAHD according to the various serum cholesterol levels were studied

TABLE – IX

S. No	SERUM CHOLESTROL	NO. OF CASES OF CAHD	PERCENTAGE
1.	101 – 150	4	11.1
2.	151 – 200	5	13.8
3.	201 – 239	7	19.4
4.	240 – 300	12	33.3
5.	301 – 350	6	16.6
6.	ABOVE 350	2	5.5

From the study, it is clear that there is an increase in incidence of the CAHD as the serum cholesterol level raises. There is a marked increase in the range of 240 – 300 mg/100ml.

j. ***Control of Diabetes and its correlation to Ischaemic heart disease***

The criteria adopted by Rastogi et al to assess the control of diabetes mellitus was used. This depends on the fasting bood sugar levels.

TABLE – X

BLOOD SUGAR LEVELS FASTING (in mg / 100ml)	LEVEL OF CONTROL
80 – 120	Excellent
121 – 150	Good
151 – 180	Fair
Above 180	Poor

In our study, out of the 36 patients, 24 patients were in the poor control group, 6 were in fair control group, 4 in the good and 2 in the excellent control group.

TABLE – XI

S. No	LEVEL OF CONTROL	NO. OF PATIENTS	PERCENTAGE
1.	EXCELLENT (90 – 120 mg%)	3	5.5
2.	GOOD (121 – 150 mg%)	4	11.1
3.	FAIR (151 – 180 mg%)	6	16.6

Thus there is a very definite increase of occurrence of coronary artery heart disease in proportion to the level of control of blood sugar.

IV. Conclusion :

1. The incidence of coronary artery heart disease in diabetic women is 36%
(ie..,36 patients out of 100 patients)
Incidence of myocardial infarction is 9%

2. Incidence of systemic hypertension is 50%
(ie.., 50 patients out of 100 patients, out of which 28% has coronary artery heart disease)

3. The incidence of coronary artery heart disease in premenopausal females is 25%. In contrast to the very low incidence in their non diabetic counterparts. The incidence of CAHD in post menopausal women is 43.3%

4. The incidence of CAHD is maximum (41.6%) in 51-60 age group patients. The incidence of hypertension is also maximum (36%) in
51 – 60 age group patients

5. The incidence of CAHD is highest with 11 – 15 years duration of diabetes mellitus (44.4%)

The incidence of obese patients in our study is 27.8% (according to BMI values). As per WHR (waist – hip ratio) 72.2% of the diabetic women with CAHD had values of more than 0.8 indicating increased WHR is a potent risk factor in diabetic women for the development of CAHD.

6. Also as per WHR 64% of the hypertensive diabetic women has values of more than 0.8.

7. Incidence of hypercholesterolaemia in diabetic women is 55.4%. an incidence of 33.3% is noted with serum cholesterol levels of 240 to 300 mg%.

8. The incidence of CAHD in patients who had very poor control of diabetes is the highest ie., 66.6%.

9. 50% of the diabetic women with CAHD had occupations involving sedentary activity. 27.7% had occupations involving moderate activity and 22.2% were manual workers. Thus CAHD is most common in sedentary persons.

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