Relation between Duration of Diabetes and Cardiac Mortality in Post-Mortem Cases Coming to GMERS General Hospital, Himmatnagar

Kamesh Modi[1], Uttamkumar Solanki[2], Kavita Banker[3], Rajni Bhagora[4], Jagdeep Jadav[5]

[1]Assistant Professor, Department of Forensic Medicine & Toxicology, GMERS Medical College, Himmatnagar, [2]Associate Professor, Department of Forensic Medicine and Toxicology, GMERS Medical College, Junagadh, [3]Assistant Professor, Department of Community Medicine, GMERS Medical College, Himmatnagar, [4]Associate Professor, Department of Forensic Medicine and Toxicology, GMERS Medical College, Himmatnagar, [5]Professor and Head, Department of Forensic Medicine and Toxicology, GMERS Medical College, Himmatnagar

Introduction

The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemias with disturbances of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion and/or insulin action[1]. Diabetes is fast becoming the epidemic of the 21st century. Type 2 diabetes, which is more prevalent (more than 90% of all diabetes cases) and the main driver of the diabetes epidemic, now affects 5.9% of the world's adult population with almost 80% of the total in developing countries[2]. World Health Organization (WHO) reports show that in India, 32 million people had diabetes in the year 2000[3]. The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025[2].

Cardiovascular disease (CVD), comprising coronary heart (CHD) and cerebro-vascular disease, are currently the leading cause of death globally, accounting for 21.9 per cent of total deaths, and are projected to increase to 26.3 per cent by 2030[4]. The factors that coalesce to increase the risk of developing atherosclerotic CHD were demonstrated in Framingham in the mid – 20th century[5] and have subsequently been shown to be pervasive across ethnicities and regions of the world[6]. These are not new risks, but the ubiquity of smoking, dyslipidaemia, obesity, diabetes and hypertension has been gradually escalating[7], and is thought to be the driving influence behind the epidemic of heart disease faced today.

Present study was conducted to estimate the diabetes as risk factor more clearly and its influence on cardio-vascular complications particularly on coronary arteries and on heart structures.

Key Words : *Diabetes, Cardiac, Mortality*

Aims and Objectives

To estimate duration of diabetes as causative factor in cardiac complications and mortality

Material and Method

This descriptive study was conducted at GMERS medical college Himmatnagar, Gujarat.

Inclusion criteria: Deceased having diabetes and PM done at Aravlli and Sabarkatha district.

Exclusion criteria: Deceased without having diabetes.

Corresponding Author:
Dr Uttamkumar Solanki
Department of Forensic Medicine and Toxicology,
GMERS Medical College,
Junagadh. E Mail : druttamsolanki@yahoo.co.in

Data collected in year January 2018 to January 2019

Primary data was collected as per predesigned Performa. All the findings were recorded as per Performa.

Study Procedure: This Data collected in year January 2018 to January 2019. All deceased coming and fulfilling inclusion criteria are included in study.

Statistical Method of analysis:

Total 98 observations collected. Then they were formatted in Microsoft Excel and analyzed in Epi info 7 software.

Observation and Discussion

Table 1: Distribution according to age and sex

	Age	Sex		Total
		Male	Female	
1	10-20	1	0	1(1.02%)
2	20-30	1	1	2
3	30-40	1	4	5
4	40-50	6	7	13(13.26%)
5	50-60	17	27	34(34.69%)
6	60-70	10	10	20(20.40%)
7	70-80	2	7	9
8	80-90	2	1	3
9	90-100	0	1	1(1.02%)
	Total	40	58	98

In this study 98 observations included as per inclusion criteria. Out of them 40 were males and 58 were females. Majority were in 50 to 60 age group, which is 34.69%. In 60-70 age group 20.40% were there. Only 1 that is 1.02% was found in 10 to 20 and 90 to 100 years age group. Meaning that person having diabetes, survive less as very few observations are there in old aged groups.

Age and sex-adjusted mortality risk in diabetic patients without pre-existing coronary artery disease was found to be equal to that of non-diabetic individuals with prior myocardial infarction (MI)[8]. These remarkable findings regarding higher risk of mortality[9,10,11] have led to suspicion that common precursors predispose to diabetes and CHD[12,13], with subsequent implications that insulin resistance, visceral adiposity, and excess inflammation[14,15,16] underlie the pathophysiology of thrombogenesis.

Table 2: Distribution according to post mortem findings

Sr.No	PM findings	Number
1	PM findings in coronaries	63 (64.28%)
	Athrosclerosis	
	LMCA	9
	LAD	31
	LCX	2
	Calcified coronaries	2
	Athromatous plaques	19
2	PM findings in walls of ventricles (Thickened walls)	21 (21.42%)
3	PM findings in valves of heart	14 (14.28%)

Above table described postmortem findings in diabetic patients. Positive observations in coronary arteries recorded in 64.28 %. Among them left anterior descending artery was affected in majority of recorded cases that is 31 (31.63%). Walls of heart found thickened in 21.42% observations. Valves of heart found affected in 14.28% observations. Those with diabetes have two- to four-fold higher risk of developing coronary disease than people without diabetes[17], and CVD accounts for an overwhelming 65-75 per cent of deaths in people with diabetes[18,19].

In a field of survey conducted in Kerala,s rural population in 1993, Raman Kutty et al found definite CHD in 1.4% and possible in 7.4%; the prevalence of major risk factors like hypertension, smoking, diabetes and obesity was 17.9%, 21.9%, 4% and 5.5% respectively[20]. Chadha et al performed a community-based survey of coronary heart disease and its risk factors in Delhi and its adjoining areas[21].

Table 3: Distribution according to cause of death

Sr. No	Cause of Death	Number
1	Cardiac Failure due to pathology in Heart	36(36.73%)
2	Cardiorepiratory failure due to different reasons	22(22.44%)
3	Shock and Hemorrhage	15
4	Acute MI	5 (5.1%)
5	Asphyxia	3
6	Cardiogenic shock due to poisioning	4
7	Burns	4
8	Carcinoma	2
9	DKA	2
10	Head Injury	2
11	Renal Failure	2
12	Brain Stroke	1

Table described causes of death in deceased who were positive for diabetes. 36.73% had cause of death described as pathology present in heart and 5.1 % had acute MI. Cardio respiratory failure was described as cause of death in 22.44%.

Table 4: Distribution according to duration of diabetes

Sr.No	Duration of diabetes(In Years)	Numbers	Percent
1	0-5	25	25.51
2	5-10	32	32.65
3	10-15	18	18.37
4	15-20	12	12.24
5	20-25	6	6.12
6	25-30	2	2.04
7	30-35	1	1.02
8	35-40	1	1.02
9	50	1	1.02
	Total	98	100%

Above table described duration of diabetes in years. 25.51% had diabetes duration was up to 5 years. Persons having diabetes 5 to 10 years were 32.65%. Meaning that 73 (74.48) deceased had more than 5 years duration of diabetes.

Conclusion

From above observations and discussion it is found that as duration of diabetes increases, its effect on coronary arteries in form of occlusion and plaque formation increases. And diabetes plays significant role as causative factor of cardio-vascular complications and mortality.

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