



A COMPARATIVE STUDY ON CARDIOVASCULAR PARAMETERS IN NORMAL & TYPE 2 DIABETES MELLITUS PATIENTS

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Conflicts of Interest: Nil

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Abstract:

Background- Neuropathy is one of the most common complications of diabetes.³ Silent myocardial infarct is more common in diabetics due to involvement of cardiac autonomic nerves.

Methods- The study was carried out in 50 Type-2 diabetic patients in the age group of 35-75 years with duration of diabetes ranging from 6 months to 20 years. Control Group consists of 50 normal individuals who matched with case in age, sex and socio economic condition as far as possible.

Results- The mean value of heart rate in 50 Diabetic patients was found to be 84.23 ± 11.21 per minute which higher when compared with the mean value of heart rate in 50 normal people which is 82.21 ± 10.98 per minute. Mean arterial pressure of Diabetic patients was found to be 96.24 ± 7.10 mmHg which again is more than mean arterial pressure of normal persons which is 93.21 ± 7.14 mmHg.

Conclusion -There is increased need for regular health checkups especially of the cardiovascular system to prevent complications.

Keywords: Diabetes mellitus, Cardiovascular changes, Heart rate, Mean arterial pressure.

Introduction:

Current interest centers on the development of a new generation of tests of autonomic nerve function that are simple, non- invasive, reproducible and allow precision in diagnosis and accurate quantization. Most of them are based on cardiovascular reflexes and abnormality in them is assumed to reflect autonomic damage elsewhere.¹

Measurement of Heart Rate Variability (HRV) is the best non- invasive method to measure the working of the heart, as it measures many aspects of cardiac functioning, including autonomic nerve functioning. The new method can replace the traditional manual method for evaluating cardiovascular responses with the advantages of speed and objectivity. Analysis of 5 minutes measurements of heart rate variability (HRV) has been shown to be a good predictor of physiological distress and mortality, especially for cardiovascular disease.²

Neuropathy is one of the most common complications of diabetes.³ Silent myocardial infarct is more common in diabetics due to involvement of cardiac autonomic nerves. At an early stage autonomic dysfunction may be asymptomatic or mildly symptomatic. Symptomatic autonomic

neuropathy carries worst prognosis, so early diagnosis is essential for maximum benefit more so in diabetes.⁴ Heart rate variability monitoring plays a vital role in prevention and early diagnosis of cardiac autonomic neuropathic complications.

Materials and Methods

The present study was conducted in two groups classified as

Group (1) 50 normal individuals

Group (2) 50 Diabetics Type-2

The study was carried out in 50 Type-2 diabetic patients in the age group of 35-75 years with duration of diabetes ranging from 6 months to 20 years. Control Group consists of 50 normal individuals who matched with case in age, sex and socio economic condition as far as possible.

Informed written consent was taken from the subjects prior to the start of the study.

Data analysis- Student's T-test and Chi-square test were applied. Results were presented as mean \pm SD or no. of patients (percent); P value < 0.05 defined statistical significant difference.

Results

A total sample size of 100 with 50 normal individuals and 50 diabetic patients were included in the study.

Table 1: Socio-demographic variable

Socio-demographic variable	Group-I	Group-II	p-value
Age (Yrs) Mean±SD	48.23 ± 7.4	49.23 ± 7.9	>0.05
Male : Female	32 : 18	31 : 19	>0.05
Hindu : Muslim	43 : 7	42 : 8	>0.05

Mean age of the group-I was 48.23±7.4 years and group-II was 49.23±7.9 years. Majority were males & Hindu in both group as compared to females & Muslim.

Table 2: Comparison of heart rate of normal persons and diabetic patients

Heart rate	Group-I	Group-II
Mean	82.21	84.23
SD	10.98	11.21
p-value	>0.05	

The mean value of heart rate in 50 Diabetic patients was found to be 84.23 ±11.21 per minute which higher when compared with the mean value of heart rate in 50 normal people which is 82.21 ±10.98 per minute. But this difference was statistically Insignificant (p>0.05)

Table 3: Comparison of Mean arterial pressure of normal persons and diabetic patients

Mean arterial pressure	Group-I	Group-II
Mean	93.21	96.24
SD	7.14	7.10
p-value	>0.05	

Mean arterial pressure of Diabetic patients was found to be 96.24±7.10 mmHg which again is more than mean arterial pressure of normal persons which is 93.21±7.14 mmHg. Though there is a difference in mean arterial pressure among two groups, but it was statistically Insignificant (p>0.05)

Discussion

The mean value of heart rate in 50 Diabetic patients was found to be 84.23 ±11.21 per minute which higher when compared with the mean value of heart rate in 50 normal people which is 82.21 ±10.98 per minute. But this difference was statistically Insignificant (p>0.05)

Similar results were found in previous studies of Ewing DJ, Martyn CN (1985)⁵, Ziegler D, Zentel C in(2006)⁶ where it was proved that heart rate of Diabetic are more when compared to normal due to vagal damage or due to decrease vagal tone.

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According to previous studies of Grossmann et al(1996)⁷ in Ann Intern Med (1996) patient with Diabetes and hypertension have a higher incidence of coronary artery disease than do patient with Diabetes or Hypertension alone. In Isfahan Diabetes prevention study⁸ there is increase in systolic & diastolic pressure and also increase in mean arterial pressure in Diabetics and they are also at high risk.

Conclusion

There is increased need for regular health checkups especially of the cardiovascular system to prevent complications.

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