



Original Article

## Study Of Tuning Fork Vibration Test in Peripheral Neuropathy in Type II D M.

Dr. A. Rajkumar<sup>\*1</sup>, Dr. D. Umadevi<sup>2</sup>, Dr. K. Ganesh Chandrakaladaran<sup>3</sup>, Dr. V. Xavier Christu Rajan<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of Physiology, Government Medical College, Namakkal, [Tamilnadu.rajkumarmusic13@gmail.com](mailto:Tamilnadu.rajkumarmusic13@gmail.com)

<sup>2</sup>Associate Professor, Department of Physiology, Government Medical College, Namakkal, Tamilnadu, [ji.umaji@gmail.com](mailto:ji.umaji@gmail.com)

<sup>3</sup>Assistant Professor, Department of Physiology, Government Medical College & ESIC Hospital, Coimbatore - 641015, Tamilnadu, [drkganesh@gmail.com](mailto:drkganesh@gmail.com)

<sup>4</sup>Associate Professor, Department of Community Medicine, Government Medical College, Namakkal, Tamilnadu, [xavier.v.dr@gmail.com](mailto:xavier.v.dr@gmail.com)

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### Corresponding Author:

**Dr. A. Rajkumar**

Assistant Professor, Department of Physiology, Government Medical College, Namakkal,

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### ABSTRACT

**Introduction:** With the increasing incidence of type II Diabetes mellitus, peripheral neuropathy and its complications are on the rise. Early diagnosis of peripheral neuropathy by simple test can guide the more rigorous control of diabetes. **Methodology:** About 50 healthy volunteers and 50 Diabetes mellitus II persons of 1-5 years duration were selected. Vibration test was done on right medial malleolus using 128Hz tuning fork.

**Results:** Among control, one person showed abnormal vibration test. Among 30 cases, 12 persons showed abnormal results.

**Conclusion:** Tuning fork test can be used as an early diagnostic tool for peripheral neuropathy in diabetes mellitus type II.

**Keywords:** Peripheral neuropathy, Tuning fork test, Diabetes mellitus.

### INTRODUCTION

Diabetes mellitus has developed as an epidemic among non-communicable diseases. The complications of it proved to be detrimental. Among the complications, peripheral neuropathy has contributed to the abnormal maintenance of systemic blood pressure, heart rate and all modalities of sensations in the hands and foot. As the early sensation to be lost is vibratory sensation, before the development of symptoms, the assessment of vibration test periodically can diagnose the peripheral neuropathy. Hence, this study was undertaken to evaluate the tuning fork test as an early diagnostic tool in the detection of peripheral neuropathy in the outpatient setting<sup>1-9</sup>.

### METHODOLOGY:

Institutional Ethics Committee clearance was obtained. Study was done in the non-communicable diseases outpatient department of the hospital. 50 healthy volunteers (Controls) were selected. 50 patients with diabetes mellitus type II with duration of 1-5 years in the age 35-50 years on oral antihypoglycemics without symptoms of peripheral neuropathy (cases) were selected. Tuning fork with 128 Hz was used. Written informed consent was taken. Tuning fork was struck against the hypothenar eminence of left hand of the examiner and placed over the right medial malleolus of the subjects. The examiner started counting the seconds till the patient raised his hands when vibration was no longer felt. The results were recorded and analysed.

### Exclusion Criteria:

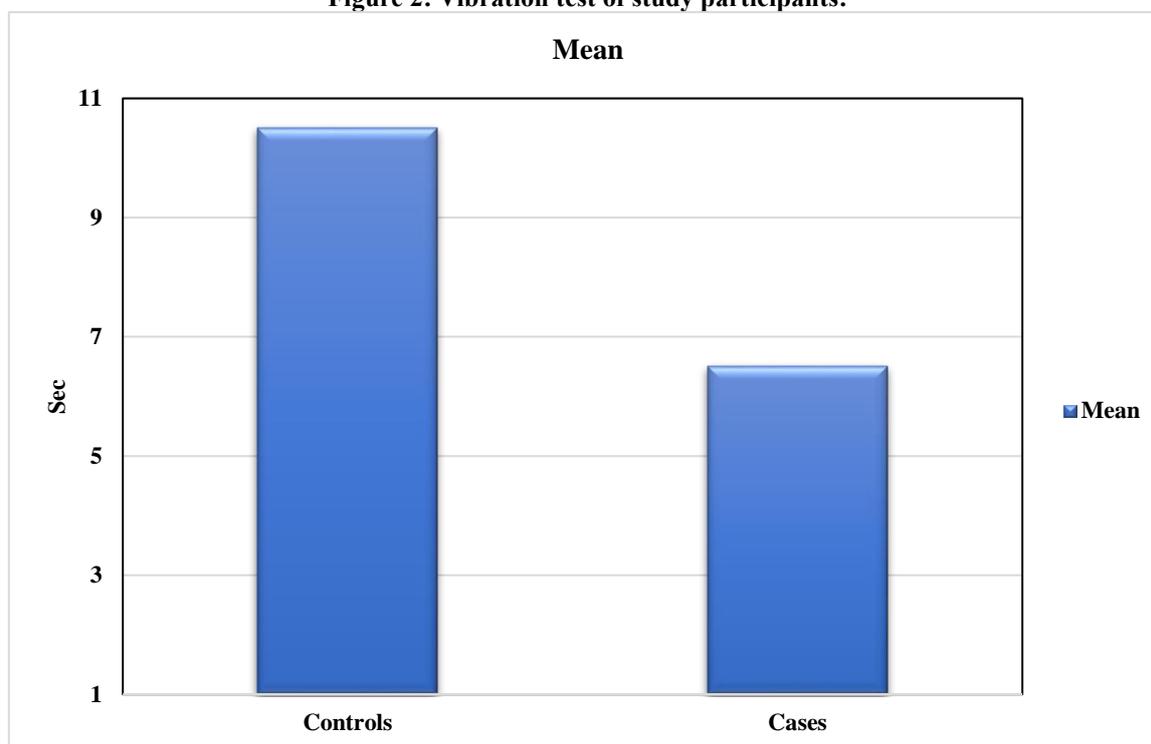
Patients with obesity, endocrine diseases, neurological diseases were excluded

### RESULT:

**Table 1: Vibration test of study participants:**

	Mean (Sec)	Median (Sec)	Range (Sec)	Significant
Cases	10.5	9.5	9.0 – 11.5	P = <0.001
Controls	6.5	5.5	4.5 – 7.5	

**Figure 2: Vibration test of study participants:**



All cases showed result of vibration test in the range of 9-11.5 sec. The mean value was 10.5 sec. The controls had the range of 4.5-7.5 sec. The mean value was 6.5 sec.

The test of significance value was  $p < 0.05$  which was statistically significant. 95% confidence intervals were given when required. Analysis was done using IBM SPSS version 19.

#### **DISCUSSION:**

In a similar study conducted by Mitsuyoshi Takhara et al<sup>10</sup>, the vibration sense testing by tuning fork showed early detection of peripheral neuropathy before the development of symptoms.

Similar study conducted by Jan-William concluded that the use of tuning fork with 128Hz is reliable test in clinical practice for screening purpose. It need not be restricted to physicians but also to nurses and other paramedics. The test deserves central role in screening peripheral neuropathy in Diabetes.

Dr Metab AI Geffari, in a study concluded that when 128Hz tuning fork test is combined with 10g semmes- weinstein monofilament test, tests could increase the detection rate of polyneuropathy in Diabetes.

#### **CONCLUSION:**

The tuning fork test using 128Hz is a simple, safe, cheap, reliable clinical test that can be used as a screening and diagnostic tool for early detection of peripheral neuropathy in Diabetes mellitus Type II. This test should be routinely done in outpatient departments.

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