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Comparison of Serum C-Peptide with Peripheral Neuropathy in Type II Diabetes Mellitus

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ABSTRACT

The subjects in group IV or those with severe neuropathy falling in class 3 had much lower serum C peptide value (i.e.) 0.7 ± 0.47 against the normal value of 0.7 to 1.9 ng/ml and with moderate neuropathy was 0.9 ± 0.42 ng/ml which was slightly better than that of group IV, Mild in III and V. nerve conduction studies as another parameter to determine the severity of Type 2 Diabetes mellitus as it is one of the most common microvascular complications of this disease and it often goes unrecognised until the patient has gone in for complications. we were also able to establish that even those cases with no signs or symptoms of neuropathy showed abnormal nerve functions in nerve conduction studies that we performed in our lab. Also those cases that had the lowest C-Peptide had the most severe neuropathy grade.

Key words: C-peptides, Diabtes mellitus, Neuropathy

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INTRODUCTION

C-peptide is a peptide composed of 31 amino acids. It is released from the pancreatic beta-cells during cleavage process of insulin from proinsulin. Though it's biologically inactive; recent studies suggest that C peptide may improve capillary blood flow in the feet, decrease urinary albumin excretion, and improve nerve function in those individuals with type diabetes mellitus but most commonly in Type I. Hence the study aims to compare the serum C-Peptide levels with Peripheral Neuropathy in patients with Type II Diabetes Mellitus [1-3].

METHODOLOGY

The sample used in this study was 90 known cases of Type 2 Diabetes Mellitus. The peripheral neuropathy class was ascertained using the nerve conduction study valves and the Michigan diabetic neuropathy score which is done using a quantitative neurological examination. Blood parameters were also ascertained. The serum c-peptide levels were determined using the C Peptide kit- Siemens Advia Centaur CP Immunoassay kit. The neurophysiological studies were done using the RMS-EMG Polyrite Mk -II and the nerves were stimulated using the anhidrotic method and was done on both the limbs.

RESULTS

From the Table 1 it can be interpreted that the serum C-

Peptide decreases linearly from Group I to group IV. So group IV with severe or Class 3 Neuropathy has the lowest C-Peptide values whereas those who have no neuropathy in Class O have the highest levels of C-Peptide. From the results it's inferred that the increasing duration of DM shows decreasing in serum C peptide values also increasing class of neuropathy is sewn when there is an increase in the duration of DM. Increasing Class of Neuropathy 1s associated with decrease in Serum C-Peptide levels. Figure 1 shows the comparison of serum c-peptide, duration of diabetes mellitus & neuropathy score among the four groups.

Table 1: Interpretation of C-peptide.

S.No	Parameters	Group I	Group II	Group III	Group IV	P value
1	Serum C-Peptide in ng/ml	1.1 ± 0.43	1.0 ± 0.38	0.9 ± 0.41	0.7 ± 0.47	0**
2	Duration of diabetes mellitus in years	6.61 ± 1.68	8.18 ± 2.27	10.05 ± 2.79	12±2.94	0**
3	Neuropathy score	0	1	2	3	0**

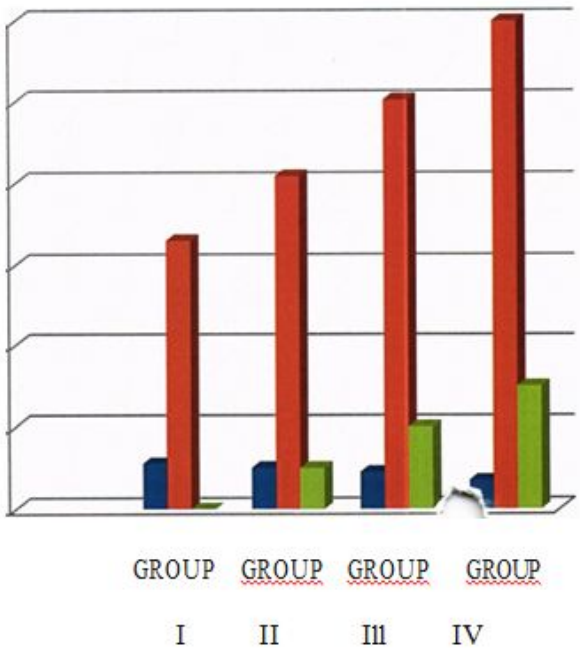

Figure 1: Comparison of serum c-peptide, duration of diabetes mellitus & neuropathy score among the four groups.

DISCUSSION AND CONCLUSION

We have found that the duration of diabetes mellitus is a factor in determining the severity of neuropathy and also in the levels of serum c peptide. Longer the duration, more severe is the class or degree of neuropathy and lesser is the serum C-peptide level. From the nerve conduction study we are able to establish that the patients with no signs or symptoms of neuropathy showed abnormal nerve conduction study, especially in cases that had lowest C peptide had the most severe neuropathy grade. C peptides administered patients of type II DM showed increased nerve conduction velocity and heart rate variability also C peptide improves the metabolic phase of diabetic peripheral neuropathy with effects on na+, k+atpase and improves the structural phase by promoting nerve regeneration [4-10].

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