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Neurology

THE PREVALENCE AND RISK FACTORS ASSOCIATED WITH ENTRAPMENT NEUROPATHY IN PATIENTS WITH DIABETES MELLITUS ATTENDING A TERTIARY CARE HOSPITAL IN CHENNAI

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ABSTRACT

BACKGROUND - Entrapment Neuropathy is one of the major problem in diabetes mellitus.There are certain risk factors like age, sex, obesity, hypothyroidism, alcoholism, status of diabetes influence the occurrence of Entrapment neuropathy among diabetes.

RESULTS - Sixty patients with Type II Diabetes Mellitus were studied in Chettinad Hospital and Research Institute, during the period of December 2017 to April 2018. Among 60 Diabetic patients, 22 patients had Carpal tunnel syndrome, 2 patients had Ulnar entrapment at elbow, 2 patients had Tarsal tunnel syndrome. In this study, we analyzed risk factors (Obese, Hypothyroidism, Trauma, Alcoholism) associated with entrapment neuropathy in diabetic patients based on statistical analysis. We have analyzed that risk factors for Entrapment neuropathy, Obese (12 out of 26 patients) plays a major role compared with other risk factors.

CONCLUSIONS - Among Diabetic Individuals 43.33% had entrapment neuropathy. The most common entrapment neuropathy in Diabetic Individuals is Carpal Tunnel Syndrome.

KEYWORDS : Entrapment neuropathy, Diabetes Mellitus, Carpal Tunnel Syndrome

INTRODUCTION

Neuropathy is a common microvascular complication of diabetes mellitus. The two major forms of diabetic neuropathy include generalized neuropathy and autonomic neuropathy. Generalized neuropathy, affecting motor and sensory peripheral nerves can be subdivided further into polyneuropathies which affect multiple nerves and focal neuropathies. Focal or entrapment neuropathies onset in gradual, slowly progressive and persist without intervention. The hypothesized mechanisms of diabetic neuropathy include ischemic effects caused by vascular abnormalities, disruption of neuronal metabolism, axonal transport mechanisms and repair capabilities, glycation of peripheral nervous system connective tissue, and glycation of Schwann cells or extracellular matrix[1,2]. The common Peripheral nerve Entrapment neuropathies (Focal neuropathies) are median, ulnar, radial, peroneal, tibial and lateral cutaneous of thigh.

Materials and Methods:

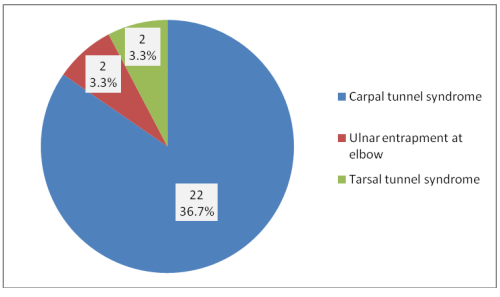
It is a Observational cross sectional study. Study objectives are to analyse the prevalence and common risk factors associated with entrapment neuropathy in Diabetic patients who have Peripheral Neuropathy. The study was ethically approved from institutional review board.Participant selection are The patients with Type II Diabetes Mellitus who comes to Neurology department, Chettinad Hospital and Research Institute during study period. The patients who fulfilled the following criteria are chosen as subjects. Then as per the previously approved proforma history, clinical examination, relevant investigations including electrodiagnostic examination(Nerve Conduction Studies were done).Inclusion Criteria: All patients who are diagnosed as Type II Diabetes Mellitus according to American Diabetes Association criteria and has features of Peripheral neuropathy..Exclusion Criteria:- Patients with Diabetic ulcers, Patients below 18 years of age

Statistical Methods:

Data was entered into Microsoft excel data sheet and was analyzed using IBM-SPSS 21 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square was used as test of significance. Continuous data was represented as mean and standard deviation. Independent t-test was used as test of significance to identify the mean difference between two groups. p value <0.05 was considered as statistically significant.

RESULTS AND OBERVATIONS

Among 60 subjects 26 had entrapment neuropathy of which 22 patients had Carpal tunnel syndrome follwed by 2 patients had Ulnar entrapment at elbow and 2 patients had Tarsal tunnel syndrome.



Among 26 patients 58% were male patients and 42% were female patients

AGE RANGE	No.	PERCENTAGE
≤ 50 Y	05	19.23
51 – 60	10	38.46
61 – 70	08	30.77
> 70	03	11.54

The symptoms associated with entrapment neuropathy in diabetes patients among that Numbness is the most common symptom(92.31%) followed by pain(57.69%),paresthesia(46.15%),weakness(38.46%),vasomotor signs(23.08%) and pinpricking sense (3.85%). In this numbness shows statistical significance.

	Findings				P-Value
	Entrapment neuropathy				
	Yes		No		
	No.	%	No.	%	
Pain	15	57.69	11	42.31	.557
Paresthesia	12	46.15	14	53.85	.845
Numbness	24	92.31	2	7.69	<.001
Weakness	10	38.46	16	61.54	.327
Pinpricking sense	1	3.85	25	96.15	<.001
Vasomotor signs	6	23.08	20	76.92	.009

	Findings				P-Value
	Entrapment neuropathy				
	Yes		No		
	No.	%	No.	%	
Obese	12	46.15	14	53.85	.845
Hypothyroidism	6	23.08	20	76.92	.009
Trauma	2	7.69	24	92.31	<.001
Alcoholism	10	38.46	16	61.54	.327
SHTN	11	42.31	15	57.69	.557

Paranthakan C et al did a descriptive study during March 2016 on A study on carpal tunnel syndrome among diabetes patients in tertiary care hospital in Thanjavur. They did a study on 106 diabetic patients and found that 19.8% according to electrodiagnostic study among diabetes patients.This study found out the uncontrolled diabetes was one of the major risk factor for CTS[7].

Aaron vinik, et al., did a cross sectional study during July,2004 on Focal Entrapment Neuropathies in Diabetes : case-control study in July,2004 and the obtained results were up to one-third of patients with diabetes are found to have some form of entrapment syndrome[8].

CONCLUSIONS

Among Diabetic Individuals 43.33% had entrapment neuropathy. Entrapment Neuropathy in Diabetic mellitus patients had male predominance(63%). The routine electro-diagnostic study had found that prevalence of Carpal tunnel syndrome was 36.66%, Ulnar Entrapment at elbow was 3.33%, Tarsal tunnel syndrome was 3.33%. The present study has found that Numbness is one of the most common symptoms in entrapment neuropathy. So the control of Diabetes is essential in preventing Entrapment Neuropathy.

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