International Journal of Medical Science and Education

www. ijmse. com

Original Research Article

pISSN- 2348 4438 | eISSN-2349- 3208

PREVALENCE OF AUTONOMIC NEUROPATHY AMONG PATIENTS OF DIABETES MELLITUS

Dr. Abdul Rehaman Pathan[1], Dr. Abdul Wahid Qureshi[2*], Dr. C.P. Meena[3],Dr. Dheerj Shekhawat[4], Dr. Arun[5]

1. Principal Specialist, 2. Assistant Professor, 3.Professior, 4. 5. P.G. Resident,Department of General Medicine, MBS hospital attached to Government Medical College, Kota.

*Corresponding author – **Dr. Abdul Wahid Qureshi**
Email id – dr.wahidqureshi80@gmail.com

Received: 17/10/2018 ***Revised:20/12/2018*** ***Accepted:*** 25***/12/2018***

ABSTRACT

Background: In previous studies, it was reported that the prevalence of autonomic neuropathy among diabetes mellitus was varied in a range from 10% to 100%. Autonomic neuropathy was reported as a consequence of nerve damage among patients of diabetes mellitus. Therefore, complete evaluation of every case of diabetes is necessary to detect cases of autonomic neuropathy in early stages. **Material & Methods:** The present prospective study was conducted among 100 patients with type 2 diabetes mellitus and confirmed with laboratory investigations were enrolled from outdoor and from ward by simple random sampling. Written informed consent was taken from each study participant. **Results:** 48 % diabetic patients presented with history of constipation which was followed by weakness of muscles among 42% diabetic patients. 31% study participant is presented with history of gustatory sweating and numbness was present in 29% patients. 28% study participant is presented with delayed gastric emptying and atonic urinary bladder was found in 24% patients. 18% patients presented with history of skin absent sweating and sexual impotence was present in 16% patients. 13% patients presented with eye pupillary changes, 7% patients had vascular dizziness, 5% patients had nocturnal diarrhea and retrograde ejaculation found in 3% patients. 11% patients presented with early cardiac autonomic neuropathy. **Conclusion:** We concluded from the present study that higher prevalence of autonomic neuropathy was found among diabetic patients. The common signs and symptoms were constipation, postural dizziness, impotence, gustatory sweating, atonic urinary bladder, gastric atony, and diarrhea.

Key words: Diabetes, autonomic dysfunction, diabetic complications.

INTRODUCTION

Diabetes is a chronic disease in etiology and occurs when the pancreas does not produce enough amount of insulin or when there is resistance towards its action on the body **(1)**. The prevalence of non-communicable diseases is increasing compared to communicable diseases. Among the non-communicable diseases, diabetes mellitus is rapidly increasing globally and affecting all the age groups **(2)**. In 2014, WHO reports that 8.5% of adults who aged 18 years or above had diagnosed with diabetes. In 2016, WHO reports that diabetes was directly responsible for 1.6 million mortality occurred worldwide. It was estimated that by the year 2030 diabetes will become seventh leading cause of mortality worldwide **(3)**. In India, the

prevalence of diabetes is increasing and imposing challenges on health care infrastructure of the country **(4)**.

In previous studies, it was reported that the prevalence of autonomic neuropathy among diabetes mellitus was varied in a range from 10% to 100%. Autonomic neuropathy was reported as consequences of nerve damage among patients of diabetes mellitus. Therefore, complete evaluation of every case of diabetes is necessary to detect cases of autonomic neuropathy in early stages **(5)**. Patients of diabetes often presents with impotence and postural syncope which are indicative for autonomic neuropathy **(6)**. Therefore, it is necessary to conduct various researches on autonomic neuropathy among diabetes patients to detect early sign and symptoms of autonomic neuropathy to prevent complications **(7)**. Hence, we conducted present study to know the prevalence of autonomic neuropathy among patients with diabetes mellitus.

MATERIALS & METHODS

The present prospective study was conducted at department of general medicine of our tertiary care hospital. The study duration was of one year from March 2017 to January 2018. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.2. Patients who were presenting with type 2 diabetes mellitus and confirmed with laboratory investigations were enrolled from outdoor and from ward by simple random sampling. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

The data were collected by detailed history, general physical and clinical examination from each patient after taking the written consent. Patients were evaluated for postural giddiness, diarrhea, constipation, impotence, disturbances of bladder sphincter, nocturnal polyuria and bouts of localized sweating. The hematological investigation was done for fasting and post prandial blood sugar and glycosylated hemoglobin (HbA1c). Patients with severe anemia, patients with chronic diseases, liver diseases, congestive cardiac failure, age more than 60 years, cardiac arrhythmias, pregnant females, electrolyte imbalance, patients who had history of central and peripheral neuropathies were excluded from the study.

Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

RESULTS

In the present study, we enrolled 100 patients of type 2 diabetes mellitus who were aged from 29 to 64 years. The mean age of the enrolled patients was 41±5.6 years. Out of total patients diagnosed with diabetes mellitus 61% patients were males and 39% patients were females. Out of the total study participants on the basis of autonomic neuropathy symptoms, 48 % diabetic patients presented with history of constipation which was followed by weakness of muscles among 42% diabetic patients.

Table 1: Presenting complaints wise distribution of cases in study group

Presenting complaints	No of patients (%)
Constipation	48
Weakness of muscles	42
Gustatory sweating	31
Numbness	29
Delayed gastric emptying – Vomiting	28
Atonic urinary bladder	24
Skin-absent sweating	18
Sexual impotence	16
Eye pupillary changes	13
Vascular dizziness	7
Nocturnal diarrhea	5
Retrograde ejaculation	3

31% study participants presented with history of gustatory sweating and numbness was present in 29% patients. 28% study participants presented with delayed gastric emptying and atonic urinary bladder was found in 24% patients. 18% patients presented with history of skin absent sweating and sexual impotence was present in 16% patients. 13% patients presented with eye pupillary changes, 7% patients had vascular dizziness, 5% patients had nocturnal diarrhea

and retrograde ejaculation found in 3% patients. 11% patients presented with early cardiac autonomic neuropathy. (Table 1)

In the present study, out of 48 % diabetic patients presented with history of constipation, 20 had autonomic dysfunction (P >0.05) which was followed by weakness of muscles among 42% diabetic patients, among them 18 had autonomic dysfunction (P <0.05). 31% study participant presented with history of gustatory sweating among them 25 had autonomic dysfunction (P <0.05) and numbness was present in 29% patients among them 19 had autonomic dysfunction (P <0.05). 28% study participants presented with delayed gastric emptying out of them 17 had autonomic dysfunction (P <0.05) and atonic urinary bladder was found in 24% patients among them 18 had autonomic dysfunction (P >0.05). 18% patients presented with history of skin absent sweating out of them 10 had autonomic dysfunction (P <0.05) and sexual impotence was present in 16% patients among them 07 had autonomic dysfunction (P <0.05). 13% patients presented with eye pupillary changes out of them 12 had autonomic dysfunction (P <0.05), 7% patients had vascular dizziness and all of them had autonomic dysfunction (P <0.05), 5% patients had nocturnal diarrhea out of them 3 had autonomic dysfunction (P <0.05) and retrograde ejaculation found in 3% patients out of them 2 had autonomic dysfunction (P >0.05). (Table 2)

Table 2: Association between Presenting complaints and autonomic dysfunction in study group

Genitourinary autonomic symptoms	Autonomic dysfunction		Z Value	P Value
	Yes	No		
Constipation	20	28	0.99	>0.05
Weakness of muscles	18	24	2.7	**<0.05**
Gustatory sweating	25	6	4.45	**<0.05**
Numbness	19	10	3.27	**<0.05**
Delayed gastric emptying – Vomiting	17	11	3	**<0.05**
Atonic urinary bladder	18	6	0.79	>0.05
Skin-absent sweating	10	8	2.35	**<0.05**
Sexual impotence	7	9	3.32	**<0.05**
Eye pupillary changes	12	1	2.33	**<0.05**
Vascular dizziness	7	0	2.08	**<0.05**
Nocturnal diarrhea	3	2	4.15	**<0.05**
Retrograde ejaculation	2	1	0.62	>0.05

DISCUSSION

In the present study, we enrolled 100 patients of type 2 diabetes mellitus who were aged from 29 to 64 years. The mean age of the enrolled patients was 41±5.6 years. Out of total patients diagnosed with diabetes mellitus 61% patients were male and 39% patients were females. Out of the total study participants on the basis of autonomic neuropathy symptoms, 48 % diabetic patients presented with history of constipation which was followed by weakness of muscles among 42% diabetic patients. 31% study participants presented with history of gustatory sweating and numbness was present in 29% patients. 28% study participants presented with delayed gastric emptying and atonic urinary bladder was found in 24% patients. 18% patients presented with history of skin absent sweating and sexual impotence was present in 16% patients. 13% patients presented with eye pupillary changes, 7% patients had vascular dizziness, 5% patients had nocturnal diarrhea and retrograde ejaculation found in 3% patients. 11% patients presented with early cardiac autonomic neuropathy.

Similar results were obtained in a study conducted by JL Noronha et al among diabetic patients to find out the burden of autonomic neuropathy and found that prevalence of autonomic neuropathy was 50%. They recorded symptoms of nocturnal polyuria, impotence, postural giddiness, constipation, disturbances of bladder sphincter, diarrhea and bouts of localized sweating **(8)**. Similar results were obtained in a study conducted by Prabhakar Rao et al among diabetic patients to find out the burden of autonomic neuropathy and found that prevalence of autonomic neuropathy was 54%. They recorded symptoms of QTc prolongation with cardiac autonomic neuropathy, postural dizziness, impotence, gustatory sweating, atonic urinary bladder, gastric atony, constipation and diarrhea **(9)**. Similar results were obtained in a study conducted by Ziaei-Rad et al among diabetic patients to find out the burden of autonomic neuropathy and found that higher prevalence of sexual dysfunctions among diabetic patients in comparison to healthy controls **(10)**.

In the present study, out of 48 % diabetic patients presented with history of constipation, 20 had autonomic dysfunction (P >0.05) which was followed by weakness of muscles among 42% diabetic patients, among them 18 had autonomic dysfunction (P <0.05). 31% study participant presented with history of gustatory sweating among them 25 had autonomic dysfunction (P <0.05) and numbness was present in 29% patients among them 19 had autonomic dysfunction (P <0.05). 28% study participant presented with delayed gastric emptying out of them 17 had autonomic dysfunction (P <0.05) and atonic urinary bladder was found in 24% patients among them 18 had autonomic dysfunction (P >0.05). 18% patients presented with history of skin absent sweating out of them 10 had autonomic dysfunction (P <0.05) and sexual impotence was present in 16% patients among them 07 had autonomic dysfunction (P <0.05). 13% patients presented with eye pupillary changes out of them 12 had autonomic dysfunction (P <0.05), 7% patients had vascular dizziness and all of them had autonomic dysfunction (P <0.05), 5% patients had nocturnal diarrhea out of them 3 had autonomic dysfunction (P <0.05) and retrograde ejaculation found in 3% patients out of them 2 had autonomic dysfunction (P >0.05)

Similar results were obtained in a study conducted by Buck A et al among diabetic patients to find out the burden of autonomic neuropathy and found that prevalence of autonomic neuropathy was 71%. **(11)**. Similar results were obtained in a study conducted by Massimo Pozzi et al among diabetic patients to find out the burden of autonomic neuropathy and found that higher prevalence of cardiac autonomic neuropathy among diabetic patients in comparison to healthy controls **(12)**. Similar results were obtained in a study conducted by Mansour A et al among diabetic patients to find out the burden of autonomic neuropathy and found that prevalence of autonomic neuropathy was 50%. They recorded symptoms of QTc prolongation with cardiac autonomic neuropathy, postural dizziness, impotence, gustatory sweating, atonic urinary bladder, gastric atony, constipation and diarrhea **(13)**.

CONCLUSION

We concluded from the present study that higher prevalence of autonomic neuropathy was found among diabetic patients. The common signs and symptoms were constipation, postural dizziness, impotence, gustatory sweating, atonic urinary bladder, gastric atony, and diarrhea.

REFERENCES

1. Olokoba AB, Obateru OA, Olokoba LB. Type 2 diabetes mellitus: a review of current trends. Oman Med J [Internet]. 2012 Jul;27(4):269–73.
2. Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. Australas Med J [Internet]. 2014;7(1):45–8.
3. Kriti Agarwal MVBSNGDR. Prevalence of Diabetes Mellitus in Rural Ahmedabad of Gujarat - A Camp Based Cross-Sectional Study. Int J Heal Sci Res [Internet]. 2014;4(6):20–4.
4. Chawla A, Chawla R, Jaggi S. Microvasular and macrovascular complications in diabetes mellitus: Distinct or continuum? Indian J Endocrinol Metab [Internet]. 2016;20(4):546–51.

5. Balcıoğlu AS, Müderrisoğlu H. Diabetes and cardiac autonomic neuropathy: Clinical manifestations, cardiovascular consequences, diagnosis and treatment. World J Diabetes [Internet]. 2015 Feb 15;6(1):80–91.

6. Vinik AI, Maser RE, Mitchell BD, Freeman R. Diabetic autonomic neuropathy. Diabetes Care [Internet]. 2003 May;26(5):1553–79.

7. Pafili K, Trypsianis G, Papazoglou D, Maltezos E, Papanas N. Simplified Diagnosis of Cardiovascular Autonomic Neuropathy in Type 2 Diabetes Using Ewing's Battery. Rev Diabet Stud [Internet]. 2015;12(1–2):213–9.

8. Noronha JL, Bhandarkar SD, Shenoy PN, Retnam VJ. Autonomic neuropathy in diabetes mellitus. J Postgrad Med [Internet]. 1981 Jan;27(1):1–6.

9. Rao PR, Malviya A. A Study of ECG changes and its association with cardiac autonomic neuropathy in Diabetes Mellitus. Int J Med Biosci Int J Med Biosci [Internet]. 2013;2(1):21–7.

10. Ziaei-Rad M, Vahdaninia M, Montazeri A. Sexual dysfunctions in patients with diabetes: a study from Iran. Reprod Biol Endocrinol [Internet]. 2010 May 18;8:50.

11. Buck AC, Reed PI, Siddiq YK, Chisholm GD, Russell Fraser T. Bladder dysfunction and neuropathy in diabetes. Diabetologia. 1976;12(3):251–8.

12. Pozzi M, Rivolta M, Gelosa M, Capra M, Poggioli G, Bernasconi A, et al. Upper gastrointestinal involvement in diabetes mellitus: Study of esophagogastric function. Acta Diabetol Lat [Internet]. 1988 Oct;25(4):333–41.

13. Al-Moallem MA, Zaidan RM, Alkali NH. The sympathetic skin response in diabetic neuropathy and its relationship to autonomic symptoms. Saudi Med J. 2008;29(4):568–72.

How to cite this article: Pathan A. R. Qureshi AW, Meena CP, Shekhawat D, Arun , Prevalence of autonomic neuropathy among patients of diabetes mellitus. Int. J. Med. Sci. Educ 2018; 5(4):578-582