Volume 05, Issue 05 (September-October 2022), PP 94-98 **www.ijmsdr.org**
ISSN: 2581-902X

International Journal of Medical Science and Dental Research

The Effect of Aspirin Treatment on Diabetic Neuropathy in Patients with Diabetes

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ABSTRACT:

Introduction: *Diabetes is associated with the involvement of nervous system defects, which results in diabetic neuropathy. Aspirin therapy has been linked to improvements in a variety of diseases.*

Objectives*: To investigate the effect of aspirin treatment on diabetic neuropathy.*

Methodology: *This is a follow-up study. Diabetes patients' files were reviewed. Files were included if neuropathy was present and aspirin treatment was recommended. Data were gathered from patient files at royal medical services' internal medicine out clinics. Gender, age, diabetic duration, aspirin treatment, and diabetic neuropathy were all studied variables. The data was entered into working Excel spreadsheets and then analyzed using SPSS version 20. Statistical analyses such as frequency, percentage, mean, standard deviation, Chi-square, and T-test were included. At alpha level 0.05, significance was accepted.*

Results: *According to the findings of this study, the prevalence of diabetic neuropathy was 25.8%. Diabetic patients had an average age of 56.9511.97 years. Aspirin was reported to be used by half of the patients. Diabetes lasted an average of 7.515.86 years. The average aspirin dosage was 111.3724.67 mg. Males were more likely than females to develop diabetic neuropathy, but this was not statistically significant ($p>0.05$). Patients who received aspirin treatment had a lower risk of developing diabetic neuropathy, but this was not statistically significant ($p>0.05$).*

Conclusion: *Although not statistically significant, male patients were more likely to develop diabetic neuropathy, whereas aspirin users were less likely to develop diabetic neuropathy.*

KEYWORDS: Diabetes, Diabetic neuropathy, Aspirin, Aspirin dose.

I. INTRODUCTION:

Diabetes mellitus (DM) is the most common metabolic disease in the world, with an estimated 382 million diabetics in 2013, and this number is expected to rise to 592 million by 2035. Diabetes is frequently associated with complications, such as diabetic neuropathy (DN)[1].

Damage to peripheral nerves causes DN. Foot nerve damage is an example of DN, which is caused by poor circulation and leads to a variety of foot complications. [2].

Diabetes affects more than 50-60% of diabetic patients and is the leading cause of non-traumatic amputation and anatomic failure. [3, 4]. Diabetics are more likely than non-diabetics to develop nerve problems at any time, but the likelihood increases with diabetes duration [5-8].

Although studies have confirmed that glycemic control aids in the prevention and progression of diabetic neuropathy, the efficacy of this trend is not well established[9].

Aspirin has been reported to be an effective treatment for cardiovascular system protection in both non-diabetic and diabetic individuals[10]. Aspirin has also been shown to have other therapeutic benefits such as tPA inhibition and antiplatelet function[11]. In their study, Alnsour and Alkhatib[12] showed Aspirin has several advantages, including anti-inflammatory, analgesic, and anticancer properties. In their study, Bhatt and Veeranjaneyulu[13] showed that When compared to the control group, the treatment of diabetic rats with both minocycline and aspirin improved various diabetic neuropathy parameters such as sensory nerve conduction velocity (SNCV), motor nerve conduction velocity (MNCV), hot plate latency, and tail flick latency. Micov *et.al*[14] showed that using a model of painful diabetic neuropathy, there was a synergism between levetiracetam and Ibuprofen/aspirin/paracetamol; the results were promising, and it is possible to introduce a useful approach to treating patients with painful diabetic neuropathy.

STUDY OBJECTIVE: To investigate the effect of aspirin treatment on diabetic neuropathy.

II. METHODS AND SUBJECTS:

Study design: This is a retrospective study.

Study sample: A total of 62 diabetic patients were included in this study.
Study procedure: Diabetes patients' files were reviewed. Files were included if neuropathy was present and aspirin treatment was recommended. Data were gathered from patient files at royal medical services' internal medicine out clinics.
Stud variables: Gender, age, diabetic duration, aspirin treatment, and diabetic neuropathy were all studied variables.

Statistical analysis: The data was entered into working Excel spreadsheets and then analyzed using SPSS version 20. Statistical analyses such as frequency, percentage, mean, standard deviation, and Chi-square were included. At alpha level 0.05, significance was accepted.

RESULTS:

General characteristics of participants

The average age of diabetic patients who participated in this study was 56.95+11.97 years, as shown in table 1. The study included 62 diabetic patients, 53.2% of whom were men. Aspirin was reported to be used by half of the patients. Diabetes lasted an average of 7.51+5.86 years. The average dose of aspirin was 111.37+24.67 mg. Neuropathy was found in 25.8% of people.

Table 1: general characteristics of participants

Variable	Description
Age (M+SD) years	56.95+11.97
Gender (N, %):	
- Males	33 (53.2%)
- Females	29 (46.8%)
Aspirin use (N, %):	
- Yes	31 (50%)
- No	31 (50%)
Duration of diabetes (M±SD)years	7.51±5.86
Aspirin dose (M+SD) mg	111.37+24.67
Diabetic neuropathy (N, %):	
- Yes	16 (25.8%)
- No	46 (74.2%)

The relationship between diabetic neuropathy andstudy variables:

The relationship between diabetic neuropathy and each gender and aspirin use was investigated using the Chi-Square test. Although males were more likely to develop diabetic neuropathy, the relationship between diabetic neuropathy and gender was not statistically significant (p=0.149), as shown in table 2.
The findings also revealed that patients who received aspirin treatment were less likely to develop diabetic neuropathy than those who did not receive aspirin treatment. Diabetes neuropathy and aspirin treatment had no statistically significant relationship (p=0.686).

Table 2: The relationship between diabetic neuropathy and study variables (based on Chi-Square test)

Variable	Diabetic neuropathy				P value
	Yes		No		
	N	%	N	%	
Gender:					0.149
- Males	11	33.3	22	66.7	
- Females	5	17.2	24	82.8	
Aspirin use:					0.681
- Yes	5	22.7	17	77.3	
- No	11	27.5	29	72.5	

Predictors of diabetic neuropathy among diabetic patients: As shown in table 3, using one-way ANOVA, we investigated the predictors of diabetic neuropathy based on study variables. None of the study variables were significantly associated with diabetic neuropathy (p>0.05 for all variables studied).

Table 3: Predictors of diabetic neuropathy among diabetic patients

		Sum of Squares	df	Mean Square	F	Sig.
Age	**BetweenGroups**	**34.461**	**1**	**34.461**	**0.237**	**0.628**
	Within Groups	**8714.394**	**60**	**145.240**		
	Total	**8748.855**	**61**			
Gender	**BetweenGroups**	**.520**	**1**	**.520**	**2.091**	**0.153**
	Within Groups	**14.916**	**60**	**.249**		
	Total	**15.435**	**61**			
Duration of diabeteses	**BetweenGroups**	**47.033**	**1**	**47.033**	**1.378**	**0.245**
	Within Groups	**2048.213**	**60**	**34.137**		
	Total	**2095.246**	**61**			
Aspirin use	**BetweenGroups**	**.039**	**1**	**.039**	**0.164**	**0.687**
	Within Groups	**14.155**	**60**	**.236**		
	Total	**14.194**	**61**			
Aspirin dose	**BetweenGroups**	**88.778**	**1**	**88.778**	**0.140**	**0.712**
	Within Groups	**12695.313**	**20**	**634.766**		
	Total	**12784.091**	**21**			

III. DISCUSSION:

According to the findings of this study, the prevalence of DN was 25.8%. This prevalence is lower than that reported in previous studies, where the prevalence of DN ranged between 50 and 60%[3- 4, 13]. This could be due to a variety of factors, one of which is that the duration of diabetes is relatively short (about 7 years). It is well known that the risk of developing DN increases with the duration of diabetes[5-8].

Although the relationship between DN and gender was not statistically significant, but the observed trend was that males were more likely to develop DN. This result is in line with other studies including the study of Aaberg et al[15] who found that males developed DN earlier than females.

There was no statistically significant link between DN and aspirin use ($p>0.05$). We believe this is due to the fact that only half of diabetic patients were treated with aspirin, which influenced the results. However, several studies have found that aspirin can help reduce DN[13-14]. These studies, however, looked at the effects of combining aspirin with other drugs such as levetiracetam or minocycline.

IV. CONCLUSIONS:

Males were more likely to develop diabetic neuropathy, though this was not statistically significant, whereas aspirin users were less likely to develop diabetic neuropathy.

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