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Research Article

**PREVALENCE OF ALZHEIMER'S DISEASE IN PATIENTS OF
TYPE II DIABETES MELLITUS**¹Dr. Muhammad Adnan Aslam, ²Dr. Moazzam Javid, ³Dr. Zahid Bashir¹Assistant Professor and Head of department of Neurology, Fatima Jinnah Medical University
/Sir Ganga Ram Hospital Lahore²P.G.R FCPS Neurology, Sir Ganga Ram Hospital, Lahore.³P.G.R FCPS Neurology, Sir Ganga Ram Hospital, Lahore.**Abstract:**

Type II Diabetes mellitus (DMT II) may increase Alzheimer's disease (AD) associated risk of dementia by various biological pathways, but the relationship between DM and AD development remains unclear.

Objective: The aim of this study was to investigate the main risk factors for dementia and cognitive impairment in patients with Alzheimer's disease after Diabetes mellitus, and to differentiate the development of Alzheimer's disease risk in people with and without DM.

Study Design: A Cohort Study.

Place and Duration: In the Neurology outpatient department Ganga Ram hospital Lahore for one year period from July 2017 to June 2018.

Methods: Among 410 participants, 214 were diabetic and 196 were non-diabetic. A Mini-Mental State Examination (MMSE) was performed. Blood glucose levels were determined randomly at each visit; a complete examination of all participants was performed clinically.

Results: In this study, we concluded that excessive weight loss due to diabetes duration, age and related conditions increase dementia and chi-square tests support the results. Diabetic patients with obesity were thought to have higher AD development possibilities and diabetic patients on borderline threshold also had a higher risk of developing AD.

Conclusion: The study showed that one of the most important risk factors to increase the risk of AD is diabetes mellitus type II. However, obesity may cause pathological problems in participants with Alzheimer's disease. Dementia decreases with life style modifications.

Key words: *Dementia, Obesity, cognitive impairment, Alzheimer's disease (AD), diabetes mellitus type II (DMTII).*

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INTRODUCTION:

Different Analytical studies have consistently demonstrated that there is a relationship between Diabetes and perceptual deficits in relation to dementia, but the incidence of Alzheimer's disease has been studied extensively worldwide [1]. Different population studies shows that most diabetic patients have insulin resistance, and mechanisms have been suggested to investigate the risk of Alzheimer's disease in patients with type 2 DM due to forced hyperinsulinemia. At present, it is common for the elderly to be a determining factor for cognition and disruption of dementia. Some tests also support the risk of diabetes and borderline dementia and Alzheimer's disease [2, 3]. Diabetes, in addition to contributing to poor memory also causes many complications to the body and reduce brain functions in several ways. It is associated with pathophysiology and hyperglycemic status, which can worsen the risk of obesity, reported among some of the reasons that put our people on daily stress, aging and memory problems [3, 4]. The prevalence of diabetes may contribute to the increase of Alzheimer's cases in the coming years, dramatically increasing in Pakistan and is a major source of anxiety.

MATERIALS AND METHODS:

This Cohort study was held in the Neurology outpatient department Ganga Ram hospital Lahore for one year period from July 2017 to June 2018.

Participation criteria: Men and women 50 years or older. Memory loss complaints, trouble remembering phone numbers or codes, such as difficulty

multitasking or remembering more than one item problems explored in everyday problems, then it is difficult to memorize the names of the people. Difficulty in tracking or receiving postcards and information quickly. Initially, memory loss should be considered as a prudent phenomenon, with no sudden deterioration in recent months.

In this study, we included 410 people over 50 years of age to determine the prevalence of dementia. In all these cases, a Mini-Mental State Examination (MMSE) was performed. Total score was 30, score of 20-24 was taken as mild dementia, 13-19 as moderate dementia and ≤ 12 as severe dementia. For this study, non-diabetic patients (n = 196) and patients with diabetes (n = 214) were selected. Initially, all subjects were subjected to extensive cognitive tests and clinical examinations as previously determined. The diagnosis of AD was made according to National Institute of Neurological and Communicative disorders and Stroke- Alzheimer's Disease and related Disorder Association (NINDS-ADRDA) [5]. At each visit blood glucose levels were determined at random. Dementia and cognitive impairment scores were applied to the patients.

RESULTS:

With the duration of diabetes, the risk of dementia increases and the chi-square test confirms the claim. The calculated statistical chi-square test value was 131 with a freedom of 9 degrees, similar to p value (< 0.006).

Table I:

Dementia severity	Duration of diabetes			
	1-5 years	6-10 years	11-15 years	16-20 years
Mild	66%	20%	0%	0%
Moderate	31%	32%	19%	09%
Severe	3%	48%	81%	91%

DISCUSSION:

Diabetes, along with other risk factors such as cardiovascular problems and obesity, is considered a common disorder of the metabolic pathway in Pakistan. In the elderly, dementia is a cognitive problem that is perceived neurologically by AD in patients with Diabetes mellitus. The above hypothesis related to diabetes, obesity and resistance changes, perhaps insulin receptors can reduce the synaptic plasticity at aging. It can cause a decrease in insulin sensitivity, can be contributed to aging these effects,

thereby reducing amyloid cleaning, increasing amyloid toxicity, obesity, diabetes and aging as seen. It is observed that the brain is bound to a high level of insulin. However, there is a constant lack of knowledge about the phenomenon that may result in cognitive dysfunction in patients with hyperglycemia [6, 7]. According to further research, it is unlikely that the effects of demographic variables, such as gender or age, socioeconomic status or educational status, confuse the ability to determine the relationship between diabetes and dementia. In

addition, the standard neuropsychological routines seen in these patients may be related to the outcome of the various pathological processes involved in the duration of the disease, may be associated with complications of cerebrovascular disease, harmful hyperglycemic effects on the brain are known to be the main cause of the reduction of detection, reaction time and processing [8, 9]. Diabetes duration is considered to be the chief cause of insulin signal changes leading to hyperglycemic cells of the brain resulting in damaging effects of nerve cells, damage to blood vessels and deposition with amyloid [10,11]. The number of real patients with diabetes mellitus is higher in our population, but fewer patients develop dementia, which limits the statistical analysis to identify these dementia risk factors in this subgroup. In our study, we concluded that clinical cognitive impairment becomes a common phenomenon in elderly people with basal diabetes and is predicted with a decrease in cognitive function. These findings have a potential clinical presence and require more verified study in diabetic and non-diabetic populations. However, control on obesity and good control of diabetes help to minimize the damaging effects of our brain and improves quality of life.

CONCLUSION:

In this study, "type II diabetes" is an important factor in increasing the risk of AD in Pakistan along with other factors such as obesity, lifestyle and aging. Prolonged diabetes, Alzheimer's disease, and people with dementia and cognitive impairment may cause related pathological conditions. Some limitations of our study deserve further discussion. Our epidemiological observations support the possible role of diabetes in the pathogenesis of AD, with emerging empirical evidence.

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