



## Characteristics of Cognitive Disorders in Diabetes

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**Abstract:** Cognitive dysfunction in patients with diabetes is not fully understood, but many studies have shown that it is caused by vascular and neurodegenerative damage. This article describes the frequency, types and severity of cognitive impairments in patients with type 2 diabetes mellitus. When studying the MMSE and MoCA scales, their specificity and the importance of these cognitive impairments for the quality of life of patients were revealed.

**Key words:** diabetes, dementia, cognitive impairment, MMSE and MoCA scale.

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### Introduction.

According to recent data from the World Health Organization, diabetes mellitus (DM) occurs in more than 400 million people worldwide, and disease-induced mortality has a high rate [1.2]. DM is a disease that damages many systems in my organism. Complications with DM are mainly associated with a chronic hyperglycemic condition, which can be divided into macrovascular and microvascular injuries. Macrovascular complications are now well known, which include an increase in the frequency of cerebrovascular complications and arteriosclerosis changes in large arteries due to progressive narrowing of the caliber of the vessels resulting in myocardial infarction in the heart and impaired circulation in the brain. On the other hand, microvascular complications are caused by peripheral circulatory disorders, which include sensory disturbances in the hands and feet, the appearance of various wounds, decreased eye sharpness, violations of filtration processes in kidney balls, the normal function of all small-caliber blood vessels is impaired due to a high blood sugar content. Complications observed in the eye are caused by preproliferative microangiopathy associated with diabetic retinopathy, which leads to increased corneal tension, progressive decrease in vision, or whole infection of visual acuity. The effect of DM on the kidneys leads to a change in kidney function, which is manifested by progressive changes in different stages, including the occurrence of microalbuminuria and proteinuria in series and at different times; and such schicistations can manifest as chronic kidney failure, which leads to uremia and the need to resort to dialysis [3]. The nervous system during the decompensated stage

of diabetes mellitus causes a change in tactile, thermal and pain sensitivity, violation of the transmission of its impulses from the muscles. In addition, peripheral neuropathy can lead to serious leg damage, at the onset of paresthesia or the appearance of burns and needle pruritus followed by the dressing of wounds caused by disruption of the components of blood vessels and nerve fibers, gangrene with the addition of various infections, which can cause deep tissue damage and require amputation [4]. Recently, however, DM has been found to be associated with another type of very serious and debilitating complication: an example of this is dementia. Type two diabetes mellitus is associated with an increased risk of cognitive dysfunction, which often affects several cognitive areas. Cognitive dysfunctions in patients with diabetes have not been studied until the end of Hali but are cited in many studies as being caused by vascular and neurodegenerative lesions.

**Research objective:** to study the types and severity levels of cognitive impairment as well as specificity in patients with type two diabetes mellitus.

**Research material and methods of examination:** 70 patients who received stationary treatment with the stage of decompensation of chronic ischemia of the skull were selected in the Departments of neurology and endocrinology of the Tashkent Medical Academy as research objects. These 70 patients were conditionally divided into two groups, i.e. Group I was made up of 42 patients with diabetes mellitus in Anamnesis with a stage of cerebral chronic ischemia decompensation, while Group II was made up of 28 patients with a stage of cerebral chronic ischemia decompensation but no diabetes mellitus in Anamnesis. All patients selected for the study were examined through Mosa and MMSE scales to determine the types and levels of cognitive impairment.

**Results of the study:** when the age and gender of all 70 patients in the survey were estimated, the average age of Group I N=42 patients was  $62.4 \pm 2.3$ , with a male proportion of 59.5% (n=25) and a female proportion of 40.5% (n=17). The average age of Group II N=28 patients was  $65.1 \pm 2.3$ , with a male proportion of 67.9% (n=19) and a female proportion of 32.1% (n=9) (Table 1).

Table 1

**Distribution of intergroup patients by age and gender**

№	Groups	Age and sex	sex				P
			male		Woman		
			ABS	%	ABS	%	
1	Group I (n=42)	$62,4 \pm 2,3$	25	59,5	17	40,5	0,037
2	Group II (n=28)	$65,1 \pm 2,3$	19	67,9	9	32,1	
	Total		44	62,9	26	37,1	

When analyzing the subjective symptoms of patients in both groups studied, headaches were observed in 77.1% (n=54) cases, while headaches were diffuse in 35.7% of them (n=25), while headaches were found to be locally characteristic in 44.2% of cases (27.7% in the ensa area, 25.9% in the forehead area). (Table 2).

Table №2

№	Subjective symptoms	Group I (n=42)	Group II (n=28)
		n=70	
		Aбс	%
1	Headache	54	77,1
		25	35,7
		29	44,2
2	- diffuse	15	21,4
3	- local	14,2	10
4	Nosistem dizziness	7,1	5

The subjective symptom of dizziness was observed in 21.4% of cases (n=15), mainly in the form of a nosistem character. Nausea was observed in 14.2% (n=10) cases, while vomiting cases were observed in 7.1% (n=5) patients. Among the N=42 patients in the I cluster examined, one cluster of patients with acute and re-impaired cerebral circulation was aniclated they accounted for 12 (28.5%), while 5 (41.6%) patients with cranial nerve abnormalities were aniclated with varying degrees of expression of cranial nerve patalogy, diabetic retinopathy, progressive decrease in cranial acuity, 2 (16.6%) of the VII pair of cranial Central paralysis 33.3%) of patients with symptoms of central paralysis of the XII cranial nerve (pseudobulbar syndrome), 1 (8.3%) patients showed signs of peripheral paralysis of cranial nerve XII (bulbar syndrome). When the motion sphere was studied, 7 (58.3%) patients were relapsed to have unilateral paresis of varying weight.

All patients examined showed decreased or loss of skin and Pai reflexes.

Pathological reflexes were found in 10 (83.3%) of patients with upper cranial circulatory disorders-of which 6 (60%) patients had Babinski's symptom, 2 (20%) had Oppenheim's symptom, 2 (20%) had paralyzed arm and oyodma ximoya reflexes.

Sensory sphere disturbances in hypesthesia and paresthesias were observed in almost all patients in the polyneuritic type. Patients initially showed a decrease in superficial sensation in the palms of the hands and feet in the form of gloves and socks, cases of incorrect perception of thermal tasurots.

In patients with intergroup estimation of MMSE scale results, cognitive impairment was observed in Group I (n=42) 45.2% (n=19) patients with mild Grade, 23.8% (n=10) patients with mild Grade, 11.9% (n=5) patients with severe grade cognitive impairment, 19.1% (n=8) patients with no cognitive impairment, 25% (n=7) patients with mild Grade, 10.7% (n=3, 64.3% (N=18) patients were not diagnosed with cognitive impairment (Table 4)

Table 4

№	Groups n=70	MMSE-scale							
		Light level (20-27)		Middle heavy level (11-19)		Heavy Degree (0- 10)		No cognitive disorders	
		ABS	%	ABS	%	ABS	%	ABS	%
1	Group I (n=42)	19	45,2	10	23,8	5	11,9	8	19,1
2	Group II (n=28)	7	25	3	10,7	-	-	18	64,3

In intergroup analysis of MOCA scale results in patients, cognitive impairment was observed in Group I (n=42) 45.2% (n=19) patients with mild Grade, 23.8% (n=10) patients with moderate grade, 11.9%(n=5) patients with severe grade cognitive impairment,19.1%(n=8) patients with no cognitive impairment ,Group II (n=28) 25%(n=7), patients with mild Grade, 10.7% (n=3) patients with moderate grade, cognitive impairment was not found in 64.3%(N=18) of patients

№	Groups n=70	MoCA – scale							
		Norma (26-30)		Light level (17-25)		Middle heavy level (11-16)		Heavy Degree (0-10)	
		abc	%	abc	%	abc	%	Аbc	%
1	Group I (n=42)	10	23,8	18	42,9	8	19	6	14,3
2	Group II (n=28)	16	57,1	8	28,6	4	14,3	-	-

**Conclusion:** in the course of analysis on the MMSE and Mosa scales of patients selected for the study, patients in Group I were analyzed to have a 2-fold higher rate of cognitive impairment compared to patients in Group II, based on observation and results, patients analyzed and worsen cognitive dysfunctions in early periods prevent their Hayat quality and the occurrence of negative complications.

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