

Correspondence: **Vladimir POROCH**

Tel.: +40.740.130.289

Fax: +40.37.810.697

E-mail: vlader2000@yahoo.com

Date of Submission: August, 30, 2011 / Acceptance: December, 20, 2011

A SURVEY OF DEMENTIA IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

**Felicia VASILE, Vladimir POROCH, Roxana CHIRIȚĂ,
Romeo Petru DOBRIN, Alexandra BOLOS**

Felicia VASILE: M. D., Drd., University of Medicine and Pharmacy "Gr. T. Popa" Iași, Romania

Vladimir POROCH: M. D., Ph. D., Assistant Professor, Department of Surgery, University of Medicine and Pharmacy "Gr. T. Popa" Iași; Senior surgeon "Sf. Spiridon" Emergency Hospital, Iași, România

Roxana CHIRIȚĂ: M. D., Ph. D., Professor, Department of Psychiatry, University of Medicine and Pharmacy "Gr. T. Popa" Iași; Senior Psychiatrist, Clinical Psychiatric Hospital "Socola" Iași

Romeo Petru DOBRIN: M. D., Ph. D., Assistant Professor University of Medicine and Pharmacy "Gr. T. Popa", Department of Psychiatry, Senior Psychiatrist, Clinical Psychiatric Hospital "Socola", Iași

Alexandra BOLOS: M. D., Ph. D., Assistant Professor University of Medicine and Pharmacy "Gr. T. Popa", Department of Psychiatry, Senior Psychiatrist, Clinical Psychiatric Hospital "Socola", Iași

Abstract:

This survey presents both the importance of diagnosing dementia in its early stages and the importance of initiating treatment, also in the early stages, in patients with Type 2 Diabetes Mellitus. The impact of this complication on the diabetic patient, on those around him, as well as the socio-economic implications, transform this disease from one of less significance in its early stages to one requiring increasing monitoring and care as its severity increases.

In the group studied the incidence of dementia in patients with type 2 diabetes was identified according to the level of severity of dementia: mild, moderate or severe. It is expected that more and more elderly patients with type 2 diabetes will develop dementia over shorter timescales. This complication can be avoided or slowed down by early diagnosis of type 2 diabetes and prompt initiation of treatment.

Key-words: type 2 diabetes, dementia, prevention

Rezumat:

Acest studiu prezintă importanța diagnosticării demenței într-o fază incipientă, precum și a inițierii tratamentului, tot în această fază, la pacienții cu diabet zaharat tip 2. Impactul pe care această complicație îl are asupra diabeticului, a celor din jurul său, precum și implicațiile socio-economice pe care le are transformă această boală din una puțin importantă la început, într-una care necesită atenție și o bună supraveghere odată cu creșterea gravității ei.

La lotul studiat, s-a constatat ponderea demenței la pacienții cu diabet zaharat tip 2, precum și tipul demenței în funcție de gravitatea sa: ușoară, medie, severă. Se preconizează faptul că tot mai mulți pacienți vârstnici diagnosticați cu diabet zaharat tip 2 vor ajunge la demență după o perioadă care va fi tot mai scurtă. Această complicație poate fi evitată sau încetinită printr-un diagnostic precoce al diabetului și prin inițierea imediată a tratamentului.

Cuvinte-cheie: diabet zaharat tip 2, demență, prevenție

INTRODUCTION

Due to its prevalence and its complications, diabetes mellitus is one of the major health problems of this century. The medical impact of diabetes is particularly due to the complexity of patient care over a prolonged period of time and increased mortality, especially in the over 45s, which has doubled, reaching 20 % of the general mortality. 'Diabetes will be one of the main challenges for public health that the world will face in the next millennium. It is recognised that diabetes affects both prosperous nations as well as poor and disadvantaged communities' – WDF (World Diabetes Foundation). In the U.S.A., statistics show that dementia affects approximately 15% of people over 70 years old. It is also estimated that the number of people with dementia in the world will triple by 2050. (6)

Many studies have shown that middle-aged people who smoke, are hypertensive or have diabetes are at high risk of developing dementia. Smokers under 55 have a five times higher risk of dementia and for diabetics the increased risk is 3-fold. (1)

Dementia is a mental disorder, characterised by a progressive decline in intellectual and social abilities. The initial symptoms are often trivial and can differ from person to person. Generally, the symptoms become more severe with time. Memory disorders are characteristic of the disease, but behavioural disorders can also be present, which may occur relatively early but are often noted late, as the indifference and reduction in activity is put down to loss of memory. A depressive syndrome may also be associated with these disorders. Furthermore, personality disorders can appear, such as irritability and ideas of persecution. (2)

MATERIAL AND METHODS

The study comprises research on a group of 1260 patients with type 2 diabetes mellitus. The research was carried out between 01.01.2008 and 31.12.2010 in Râmnicu Sărat City Hospital. After analysing the data it was found that of the 1260 patients with type 2 diabetes, 61 cases also presented dementia, representing 4.8% of the patients studied. The severity of the dementia was classified in three stages: mild, moderate and severe.

Tab. I: *Distribution of the number of patients depending on the type of dementia*

Type of dementia	No. of patients	Percentage of total number of patients with type 2 diabetes
Mild	31	2,4 %
Moderate	19	1,5 %
Severe	11	0,9 %
Total	61	4,8 %

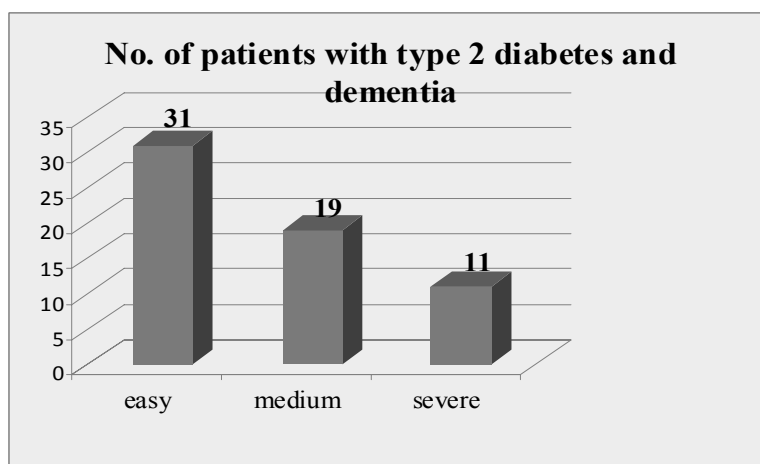


Fig. 1. Distribution of the number of patients depending on the type of dementia

It was found that a mild form of dementia was present in 31 patients, representing 2 % of all the patients studied.

In contrast, there were fewer cases of the moderate form of dementia – 19 cases, representing 1.5 % of the study group.

The smallest number of cases had severe dementia – 11 patients, representing 0.9 % of all the study group. In table 1 and figures 1 and 2, it can be seen that of the 61 patients with dementia, half presented a mild form of the illness, whilst the other half had a medium or severe form of dementia.

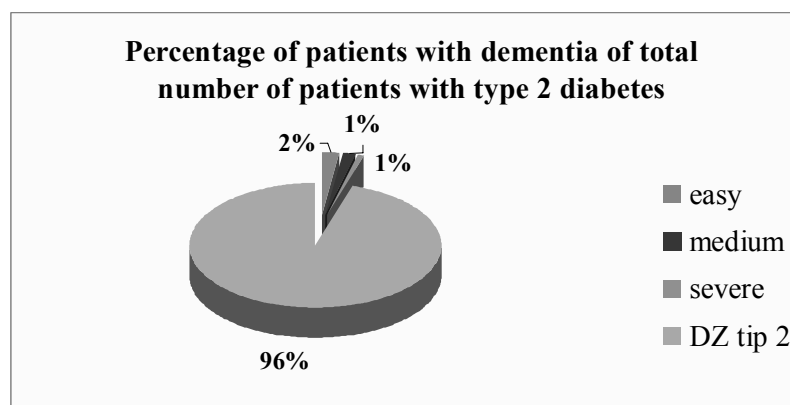


Fig. 2. The distribution of patients depending on the type of dementia (% of total number of patients with type 2 diabetes)

In the 61 patients diagnosed with dementia it was found that the majority had poor diabetic control, more precisely 56 patients were hyperglycaemic (91.8 %), and glycosylated haemoglobin was over 7 % in 41 cases (67.2 %). About 2/3 of the 61 patients with dementia had dysmetabolic syndrome, with raised total cholesterol and/or triglycerides observed in 72.1 % (44 patients) and 62.3 % (38 patients) respectively.

Tab. II: The distribution of number of patients depending on diabetic control

Parameter Studied	No. of patients	Percentage of total no. of patients with dementia
Glycaemia > 140 mg/dl	56	91,8 %
HbA _{1c} > 7 %	41	67,2 %
Total cholesterol > 210 mg/dl	44	72,1 %
Triglycerides > 150 mg/dl	38	62,3 %

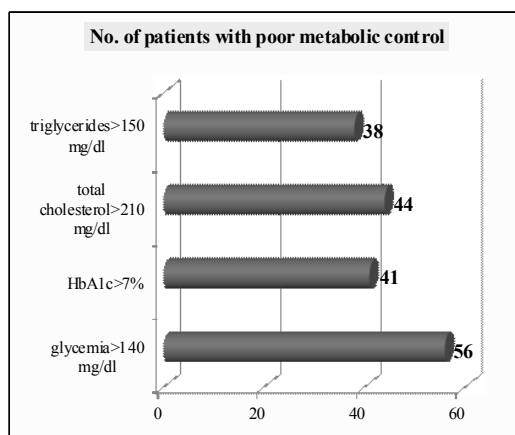


Fig. 3: *The distribution of number of patients depending on diabetic control*

DISCUSSION

There are two theories for dementia existing as a complication of type 2 diabetes mellitus: the vascular theory and the non-vascular theory. The vascular theory is that known by most researchers, but there are studies and opinions suggesting that dementia is also caused by other factors, not only vascular. One of these is hyperinsulinemia, a consequence of obesity and insulin resistance, which in time can lead to dementia and even Alzheimer's disease.

It is expected that patients with type 2 diabetes will quickly progress from the mild form of dementia to moderate and severe forms with age. (3) In the patient group studied, those diagnosed with dementia were over 60 years old and presented varying levels of obesity.

The 4.8 % of patients diagnosed with dementia represents a high proportion as this complication of type 2 diabetes could be prevented by prompt initiation of treatment in the early stages of type 2 diabetes, and correct dosage of medications must be administered from then on.

If patients modified their lifestyles by exercising more and changing their diet, the number of those suffering with dementia and impaired cognitive function would be reduced (5).

CONCLUSION

Elderly patients with a diagnosis of type 2 diabetes mellitus for a significant length of time, with poor diabetic control, present an increased risk of impaired cognitive function, with the potential for developing a form of dementia. This complication of type 2 diabetes mellitus can be prevented in those patients at increased risk.

Acknowledgments and disclosure

The authors declare that they have no potential conflicts of interest to disclose.

REFERENCES:

1. Ahiluoto, S., Polvikoski, T., Peltonen, M., Solomon, A., Tuomilehto, J., Winblad, B., Sulkava, R., Kivipelto, M., *Diabetes, Alzheimer disease, and vascular dementia: a population-based neuropathologic study. Neurology.*, 2010 Sep. 28;75(13): 1195-202.
2. Feil, D. G., Lukman, R., Simon, B., Walston, A., Vickrey, B., *Impact of dementia on caring for patients' diabetes. Aging Ment Health.* 2011, Jan 1:1-10.
3. Holt, P., *Taking hypoglycaemia seriously: diabetes, dementia and heart disease. Br J Community Nurs.* 2011 May; 16(5):246-9.
4. Luchsinger, J. A., *Diabetes, related conditions, and dementia, J Neurol Sci.*, 2010 Dec 15;299(1-2):35-8.
5. Luchsinger, J. A., *Type 2 diabetes, related conditions, in relation and dementia: an opportunity for prevention? J Alzheimers Dis.*, 2010;20(3):723-36.
6. Pischon, T., Boeing, H., Hoffmann, K. et al., *General and abdominal adiposity and risk of death in Europe. N Engl J Med.*, 2008;359:2105-2120.