CLINICAL AND EPIDEMIOLOGICAL FEATURES OF PATIENTS WITH NEWLY DIAGNOSED DIABETES MELLITUS IN BIHOR COUNTY, ROMANIA

Vlad Ioana Andra[1], Amorin Remus Popa[2]

[1]University of Oradea, Faculty of Environmental Protection, Bd. Magheru 26
Clinical County Emergency Hospital, Oradea – Laboratory
ioana_andravlad@yahoo.co.uk
[2]University of Oradea, Faculty of Medicine and Pharmacy, Diabetes Clinic

Abstract

During the last 40 years, the prevalence of diabetes mellitus has raised in the whole world, and the tendency for the future is of continuous increase in all ethnic groups, male or female, for all age groups. This increase was especially noticed for type 2 diabetes mellitus.

In Bihor county, during 2007-2011 there were a total number of 14,437 new cases of diabetes, the highest number of cases were registered in 2008. Since 2009 we see a downward trend, the prevalence of inaugural diabetes cases decreasing. The prevalence of diabetes is increasing in Bihor County. Most patients are diagnosed late, when complications of diabetes occur.

Key words*:* diabetes mellitus, epidemiology, prevalence, inaugural diabetes

INTRODUCTION

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both (American Diabetes Association, 2012).

For the study of diabetes mellitus epidemiology, there is no worldwide approved standard research method. The epidemiological studies published so far were made in different places (geographical localization) and in different time periods (chronological extent), investigating either the whole population or a certain age group, following certain nationalities and ethnic groups, (Vlad, I., AR. Popa, 2012)

During the last 40 years, the prevalence of diabetes mellitus has raised in the whole world (Haris, MI. et al., 1998, Cowie, CC. et al., 2006, Cowie, CC. et al., 2008), and the tendency for the future is of continuous increase in all ethnic groups, male or female, for all age groups (Mokdad, AH. et al., 2000, DECODE, 1998). This increase was especially noticed for type 2 diabetes mellitus. (Mokdad, AH. et al., 2000)

The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030. The most

important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people older than 65 years of age (Wild, S., et al., 2004).

In Romania, the prevalence of diabetes in 2003 was 1.98%, rising to 2.12% in 2004 and 2.23 % in 2005, with a record number of 429.979 patients in 2003, 459.518 in 2004 and 482.250 in 2005.

The number of new cases was 50.062 in 2003, 54.561 in 2004 and 53.443 in 2005, with an incidence of 230 per 100.000 inhabitants in 2003, 251 in 2004 and 247 in 2005, according to data from the Ministry of Health. According Eurodiab study, the incidence of diabetes for the group of age 0-14 years in our country is about 3 per 100.000 people, one of the lowest in Europe.

Romanian statistics for 2010 showed that there were 68.381 new cases of diabetes (incidence is 319 per 100.000) compared with 72.038 new cases of diabetes (incidence is 336 per 100.000) in 2009. The number of the patients remaining in the evidences in 2010 was 747.721 compared to 703.324 patients left out in 2009.

OBJECTIVES OF THE STUDY

With this study we aim to analyze all newly diagnosed cases of diabetes in Bihor county, monitored by the County Centre for Diabetes, Nutrition and Metabolic Diseases Bihor, for a period of five years (2007-2011) with the main purposes:

- Collection of data on all cases of diabetes found in Bihor county throughout.
- Storage and processing of data in medical or non-medical manner, accessible for the staff with power of decision.
- Awareness of the problem of diabetes, which currently is one of the most common chronic disease; prevalence (especially diabetes type 2) and the incidence of diabetes is increasing.

MATERIAL AND METHOD

This was a prospective study which included all new cases of diabetes (type 1 and type 2) in Bihor County, in the period 2007-2011. The necesary data for this study was provided by the County Centre for Diabetes, Nutrition and Metabolic Diseases Bihor, which is a structure including the subsystem with relative autonomy in the health care system , part of the national health system in Romania. The study included all patients from Bihor county newly diagnosed with diabetes mellitus.

RESULTS

In Bihor county, during 2007-2011 there were a total number (n) of 14,437 new cases of diabetes, the highest number of cases were registered in 2008. Since 2009 we see a downward trend, the prevalence of inaugural diabetes cases decreasing (table 1, figure 1).

Table 1.

Newly diagnosed cases of diabetes during 2007-2011

year	**newly diagnosed cases of diabetes**	**prevalence,%**
2007	2825	4,48%
2008	4474	7,09%
2009	2586	4,10%
2010	2483	3,94%
2011	2069	3,28%

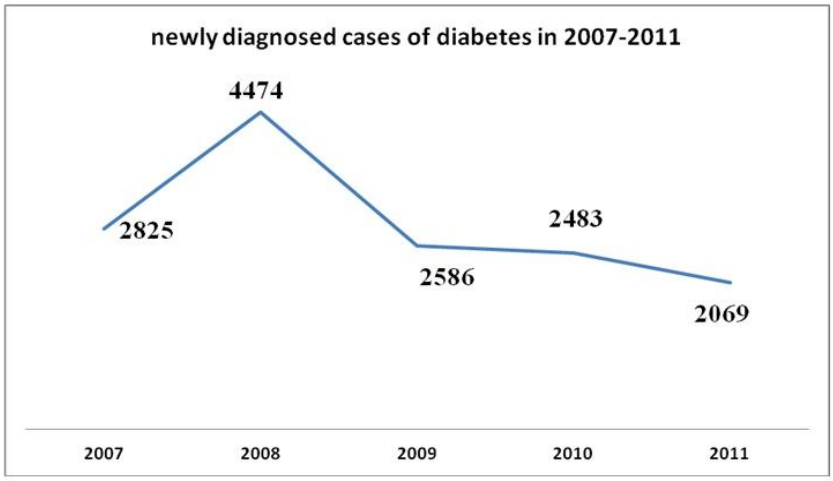

Figure 1: newly diagnosed cases of diabetes during 2007-2011

The main number of cases were represented by type 2 diabetes (n = 14,358), followed by diabetes mellitus type 1 (n = 49). Cases of gestational diabetes or other types of diabetes were in extremely low number (n = 20 and n = 10). (table 2, table 3)

Table 2.

Distribution of the types of diabetes

types of diabetes	number of patients (n)	percent,%
type 2 diabetes	14358	99,45%
type 1 diabetes	49	0,33%
gestational diabetes	20	0,13%
other types of diabetes	10	0,07%

Table 3.

Distribution of the types of diabetes by year (2007-2011)

year	newly diagnosed cases of diabetes type 2		diabetus mellitus type 1		gestational diabetes		other types of diabetes	
	number of patients	percent, %	number of patients	percent, %	number of patients	percent, %	number of patients	percent, %
2007	2807	99,36	11	0,39	4	0,14	3	0,11
2008	4452	99,51	14	0,31	6	0,13	2	0,04
2009	2570	99,38	10	0,39	4	0,15	2	0,08
2010	2469	99,44	8	0,32	4	0,16	2	0,08
2011	2060	99,57	6	0,29	2	0,10	1	0,05

The provenience of diabetic patients was predominantly rural (54.69%) compared to 45.31% from urban areas.

The distribution of diabetic patients by gender shows that type 2 diabetes was found predominantly in women (52.6%) than in men (47.4%).(table 4)

Table 4.

Distribution of the diabetes cases by sex and year (2007-2011)

year	sex	newly diagnosed cases of diabetes mellitus		
		number of patients		percent,%
2007	women	2825	1423	50,37%
	men		1402	49,63%
2008	women	4474	2276	50,87%
	men		2198	49,13%
2009	women	2586	1319	51%
	men		1267	49%
2010	women	2483	1500	60,41%
	men		983	39,59%
2011	women	2069	1037	50,13%

	men		1032	49,87%

Distribution by sex and age (figure 2, table 5) shows that the average age of male patients at the time of diabetes diagnosis was 55.08 ± 15.82 years, compared with female subjects who had a mean age of 60.36 ± 14.99 years at the time of diagnosis (p = 0.08).

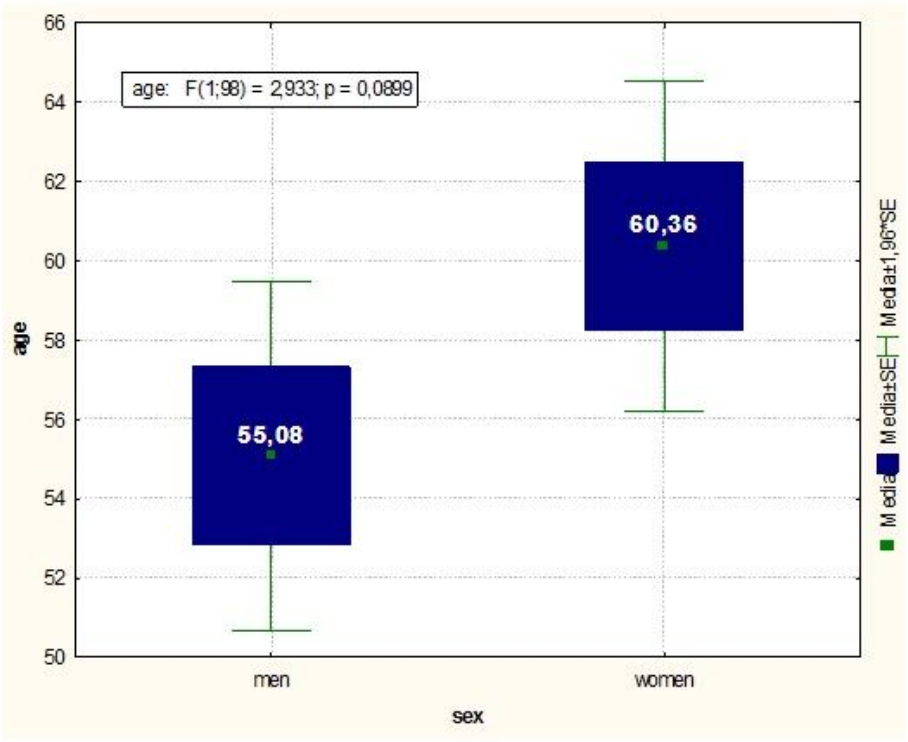

Figure 2: distribution of the diabetes cases by sex and age (2007-2011)

The mean age of men and women by year is represented in table number 5.

Table 5.

The mean age of men and women by year

Year	age , years	
	women	men
2007	58,40±19,91	59,70±20,21
2008	59,20±19,26	48,50±16,87
2009	62,60±17,68	66,20±14.92
2010	58,10±9,36	52,00±7,91
2011	63,50±5,19	49,00±11,70

Regarding females, 67% of diabetic women were menopausal compared to 33% of women with childbearing potential.

Regarding symptoms, classical triad: polyphagia, polydipsia was recorded at a number of 54% patients. Diabetes was diagnosed after referral to physician for its chronic complications in a percentage of 36% of patients.

Obesity, defined as a body mass index over 25 kg/m^2 was detected in 65,5% patients with diabetes, in which female 54,15% and 67,55 % male.

Among the predisposing factors for development of diabetes, it was noted the high prevalence of obesity, followed by sedentarism simillary to family history of diabetes.

DISCUSSIONS

Several epidemiological studies with two or three decades ago established that 3.5% of the population is affected by diabetes, which means that in Romania currently live about 800.000 people with diabetes. However, in diabetes centers in the country the number of patients recorded is only about 250.000. An unknown number of patients are in the evidence of internal medicine cabinets. Also, some administrative sectors such as Military and Romanian Railways Hospital have a separate record.

Our study shows that in Bihor County, in 2009, the prevalence of diabetes was 4.1% and in 2010 3.94% and in 2011 3,28%. A downword trend is observed.

Classic symptoms of diabetes were met in only 54% of diagnosed patients. They are relatively younger age , under 60 years. Most patients

with diabetes were diagnosed after laboratory investigations carried out during admissions for other acute or chronic diseases, and only a very small percentage of patients were diagnosed after performing some routine medical tests.

In this case concur the poor education of the general population in terms of disease symptoms so that the presentation at doctor is late, and also poor training of family doctors in problematic of diabetes. This explains why many of the cases of diabetes are diagnosed because of their chronic complications.

Actual prevalence of type 2 diabetes in the population of Romania is around 5%. Most cases are diagnosed at older ages. This fact is demonstrated by the high percentage of diabetes mellitus type 2 or impaired glucose tolerance recorded in population studies. It explains the high frequency of disease discovered during a major cardiovascular event as miocardial infarction or cerebrovascular event as stroke.

Unlike almost equal distribution of diabetes mellitus type 1 throughout life, type 2 diabetes shows a specific pattern. Very rare before age of 20 years, rarely between age of 20 to 40 years, with a sharp increase between age of 40 to 60 years, reaching a maximum between 60 to 70 years, after which the curve drops as suddenly.

CONCLUSIONS

The prevalence of diabetes is increasing in Bihor County. Most patients are diagnosed late, when complications of diabetes occur.

Accurate knowledge of total cases of diabetes in a population will be possible only when general practitioners, working with your diabetes team will collaborate in achieving a systematic screening program, supported by information technology and rigorous evidence of cases found in a well-defined territory.

REFERENCES

1. **American Diabetes Association,** 2012, Diagnosis and Classification of Diabetes Mellitus, *Diabetes Care* January 2012, vol. 35 no. Supplement 1 S64-S, 2012.
2. **Cowie, CC., KF. Rust, DD. Byrd-Holt, et al**., 2006, Prevalence of diabetes and impaired fasting glucose in adults in the U.S. population: National Health And Nutrition Examination Survey 1999-2002. *Diabetes Care* 29: 1263-1268.
3. **Cowie, CC., KF. Rust, ES. Ford, et al**., 2008, Full accounting of diabetes and pre-diabetes in the U.S. population in 1988-1994 and 2005-2006. *Diabetes Care* 32: 287-294.
4. **DECODE,** 1998**,** Study Group on behalf of the European Diabetes Epidemiology

Study Group. Will new diagnostic criteria for diabetes mellitus change phenotype of patients with diabetes? Reanalysis of European epidemiological data. *BMJ* 317: 371–375.

5. **Haris, MI., KM. Flegal, CC. Cowie, et al**., 1998, Prevalence of diabetes, impaired fasting glucose, andimpaired glucose tolerance in U.S. adults: the Third National Health and Nutrition Examination Survey,1988-1944. *Diabetes Care* 21: 518-524.
6. **Mokdad, AH., ES. Ford, BA. Bowman, et a**l., 2000, Diabetes trends in the U.S.: 1990–1998. *Diabetes Care* 23:1278–1283.
7. **Vlad, I., AR. Popa**, 2012, Epidemiology of Diabetes Mellitus: A Current Review, *Romanian Journal of Diabetes Nutrition and Metabolic Diseases*. Volume 19, Issue 4, 433–440.
8. **Wild, S., MB. Bchir, G. Roglic, et al**., 2004, Global Prevalence of Diabetes Estimates for the year 2000 and projections for 2030, *Diabetes Care*, May 2004, vol. 27 no. 5 1047-1053.