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AWARENESS OF NAFLD AMONG RESIDENTS OF ALMATY CITY SUFFERING FROM DIABETES TYPE 2

Non-alcoholic fatty liver disease (NAFLD) is one of the leading liver diseases on the planet. The prevalence of NAFLD is 25.2%. There is a direct correlation between NAFLD and metabolic disorders such as diabetes mellitus 2 type (DM2), obesity, insulin resistance (IR), dyslipidemia. The global pandemic of diabetes is directly proportional to the increase in the incidence of NAFLD

To study the awareness of patients with DM2 about NAFLD, including risk factors for the development of the disease. The data obtained can be used in the development of educational tools for the prevention, early detection and treatment of this disease.

In 2018-2019, in city outpatient clinic and medical centers, endocrinologists conducted a written survey of patients with DM2 registered in Almaty. The survey questionnaire included 16 items: demographic data, social status, adherence to treatment, knowledge about fatty liver disease, information about the risk of cirrhosis, predictors of the incidence of NAFLD. The questionnaire also included information about the prevention, diagnosis and treatment of NAFLD, as well as informing doctors observing patients about NAFLD.

The vast majority of the tested patients had no idea about NAFLD and stated that doctors did not discuss this disease with them.

Non-alcoholic fatty liver disease is a potentially reversible liver disease with limited treatment options. Patients with DM should be aware of the possibility of developing this disease, and consultations with primary care physicians can be very important in the prevention strategy of NAFLD.

Key words: non-alcoholic fatty liver disease, diabetes mellitus type 2, fatty hepatitis, cirrhosis, Almaty.

Introduction

Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver diseases worldwide, with a global prevalence of 25.2% [1]. NAFLD is determined by the presence of liver steatosis detected by ultrasound or histology, and the absence of secondary causes of fat accumulation in the liver (for example, excessive alcohol consumption, steatogenic drugs or monogenic hereditary diseases) [2-4].

Clinically, patients with NAFLD often have components of the metabolic syndrome, such as obesity, type 2 diabetes mellitus (DM2), hyperlipidemia and arterial hypertension [5-7]. DM2 is the most important risk factor for NAFLD and the development of non-alcoholic steatohepatitis (NASH) and the most important clinical predictor of adverse clinical outcomes, such as liver cirrhosis and mortality [8-12].

It is important to note that the outcomes of NAFLD in patients, such as the development of hepa-

tocellular carcinoma and mortality associated with liver diseases, seem to be negatively affected by the presence of DM2 [13-15]. The analysis showed that the expected increase in the incidence of diabetes and obesity in the United States should have caused a large increase in the incidence of NASH and its complications [16]. In this context, it is important to remember that NAFLD currently accounts for approximately 75.1% of cases of chronic liver disease in the United States [17] and it is potentially the main cause of hepatocellular carcinoma in 14.1% of all cases [18].

De facto, NAFLD / NASH is one of the three main indications for liver transplantation in the USA [7, 19, 20], while DM2 is an important factor affecting the burden and progression of NAFLD disease in patients. The pathophysiology, diagnosis and treatment of NAFLD have been widely studied, but public awareness of NAFLD in patients with DM2 is unknown.

The purpose of this research is to study the awareness of patients with DM2 about NAFLD, including risk factors for the development of the disease.

The data obtained can be used in the development of educational tools for the prevention, early detection, and treatment of this disease.

Materials and Methods

Endocrinologists conducted a written research of patients with DM2 registered in Almaty in city polyclinics and medical centers in 2018-2019. The age of the participants was over 39 years old. To achieve this goal, 1000 respondents were invited to answer the questionnaire questions in a semi-structured interview. After the individuals took part in the research and filled out the questionnaire (including age, social status, period of disease, adherence to treatment), our researchers conducted a conversation about fatty hepatitis, the effect of diabetes on the liver, the risk of liver cirrhosis. After a brief educational essay, the individuals allowed to fill out a questionnaire. The research group including gastroenterologists, endocrinologists and statisticians have prepared comprehensive questionnaires. The questionnaire was updated after discussion with the focus group. The average time to complete the questionnaire was about 5-7 minutes.

The research questionnaire included 16 items: demographic data, social status, adherence to treatment, knowledge about fatty liver disease, information about the risk of cirrhosis, predictors of the incidence of NAFLD. The questionnaire also included information about the prevention, diagnosis and treatment of NAFLD, as well as informing doctors observing patients about NAFLD.

Statistical analysis

Data analysis was performed using SPSS, continuous variables were shown as averages, and median and categorical variables were evaluated with using chi-square. The p-value of 0.001 was considered statistically significant.

Results and Discussion

The results obtained: Demographic and social data of respondents

The study involved 1,000 respondents of both sexes suffering from DM2 (Table 1). The main part of the respondents were persons aged 50-59 years – 552 patients (55.2%). 316 people (31.6%) were participants aged 40-49 years. The smallest part was made up of people under age of 39 years (132 patients (13.2%)). 488 respondents (48.8%) were identified as Kazakhs, 296 (29.6%) – Russians and 216 (21.6%) – other ethnic groups. The majority of participants had higher education (632 people (63.2%)). The disease experience of patients with DM2 ranged from 1 to 5 years in 160 patients (21.4%), 6-14 years – in 408 (38%) and 15-20 years – in 320 (28.3%), respectively, which is a reliable to $p=0.001$.

Adherence (compliance) to treatment in patients with DM2

In general, 992 patients (99.2%) participants were committed to the treatment of (Table 1). There was no significant difference in adherence to the diet in patients (480 (44.5%) and 520 (55.5%), respectively), $p=0.001$. 1/3 of participants had physical activity 424 (37.4%), $p=0.001$. Most respondents did not attend diabetes school, 640 people (65.2%), $p=0.001$. When asked about keeping a self-monitoring diary, more than a half of the participants, 576 patients (59.5%), answered that they keep periodic records, $p=0.05$.

Table 1 – Demographic and social data of respondents

Social status and commitment to the treatment of patients with type 2 diabetes mellitus (DM2)	Quantity	%	p
Age			
<39	132	13,2	
40-49	316	31,6	
50-59	552	55,2	
Nationality			
Kazakh	488	48,8	
Russian	296	29,6	
other	216	21,6	
Education			
primary school	8	0,8	
secondary school	176	17,6	
secondary professional	120	12	
Associate of Science	64	6,4	
higher	632	63,2	

Disease experience in patients with DM2			0,001
>1 year	48	8,0	
1-5 years	160	21,4	
6-10 years	408	38	
15-20 years	320	28,3	
more than 20 years	64	4,3	
Do you observe adherence (compliance) to treatment? (Regularly take hypoglycemic drugs)			
yes	992	99,2	0,054
no	8	0,8	
Do you follow diet No. 9?			
yes	480	44,5	0,001
no	520	55,5	
Do you observe physical activity?			
yes	424	37,6	0,001
no	576	62,4	
Are you taking medication yourself?			
yes	80	7,5	0,321
no	920	92,5	
Do you attend the "diabetes school"?			
yes	200	17,0	0,001
no	640	65,2	
periodically	160	17,8	
Do you keep a self-control diary?			
yes	296	27,8	0,05
no	128	12,7	
periodically	576	59,5	

Awareness of patients with DM2 about non-alcoholic fatty liver disease

Half of the study population, 496 patients (44.8%), stated that they had encountered the “fatty hepatitis and non-alcoholic fatty liver disease” term, which is reliable ($p=0.001$) (Table 2). 168 (18.3%) participants heard this term from an endocrinologist, 288 (24.1%) from a doctor ultrasound diagnostics, most of the participants, 472 patients (51.3%), received information from other sources – which is reliable ($p=0.001$). The smallest part of the participants

received information from other patients (40 (2.8%)) and from the Internet/television (32 (3.5%)).

328 (34.3%) respondents knew that they had “fatty hepatitis”, 448 (39.4%) were sure that they did not suffer from this disease and 224 (26.3%) did not know about the presence or absence of the disease. De facto, doctors did not discuss the problem of NAFLD ($p=0.007$) with the majority of the studied population – 688 (70.9%). Only 112 (11%) respondents were referred to a gastroenterologist/hepatologist to assess the liver condition ($p=0.171$).

Table 2 – Awareness of patients with DM2 about non-alcoholic fatty liver disease

Awareness of patients with DM2 about non-alcoholic fatty liver disease	Quantity	%	correlation value	p
1	2	3	4	5
Have you ever come across the term "fatty hepatitis or non-alcoholic fatty liver disease"?				
Yes	496	44,8	-0,204	0,001
No	504	55,2		
Who have you heard this term from?				
endocrinologist	168	18,3	-0,143	0,001
ultrasound doctor	288	24,1		
from other patients	40	2,8		
from the internet/TV	32	3,5		
other	472	51,3		
Did you know that you have fatty hepatitis?				
No	448	39,4	-0,169	0,001
Yes	328	34,3		

1	2	3	4	5
I'm not sure	224	26,3		
Has there been a conversation with your doctor about your "fatty hepatitis"?				
yes	312	29,1	-0,086	0,007
no	688	70,9		
What recommendations did your doctor make to you about your fatty hepatitis?				
prescribed an additional drug	48	6,4	-0,107	0,02
prescribed a diet	272	24,7		
prescribed physical exercises	48	3,6		
didn't give any recommendations	112	8,2		
other	520	57,1		
Have you been referred by your endocrinologist/GP to a gastroenterologist-hepatologist concerning your "fatty hepatitis"?				
Yes	112	11	-0,044	0,171
No	888	89		

This study is a semi-structured interview of patients with DM2, during which were obtained the respondents' knowledge and awareness of NAFLD in Almaty. Conducting a personal interview is much more effective in terms of time and the sense of comfort of patients during the interview. However, this research method has limitations. In particular, there is a possibility of a biased attitude towards a respondent who does not answer questions due to lack of time (appointment of an endocrinologist for one patient is 15-20 minutes).

In general, the study revealed insufficient awareness of patients with DM2 of NAFLD in Almaty. The majority of 504 respondents (55.2%) have never heard of this disease. Only 1/3 of patients, 312 people (29.1%) discussed the problem of NAFLD with the attending physician.

It is noted that the participants do not have a clear understanding of the tactics of NAFLD treatment. Firstly, dietary intervention and regular exercise can improve some metabolic factors and potentially neutralize the development of NAFLD. Raising public awareness of NAFLD risk factors and public health measures to maintain a healthy diet, regular exercise

and maintain an ideal body weight is of paramount importance to address this problem.

Conclusion

Our study showed that a significantly high percentage of the population, as a rule, has no idea about NAFLD, which is often associated with DM2 and can lead to the development of liver cirrhosis and hepatocellular carcinoma. We hope that the conducted research encourages doctors to conduct an educational campaign about the possibility and high risk of developing NAFLD in patients with DM2, which mutually burden the course of the pathological process and negatively affect the prognosis of the disease and life expectancy in this group of patients.

It is necessary to carry out educational work in order to raise awareness about NAFLD so as to prevent, early detect and timely treat this pathology. Discussion and consultation of patients with primary care physicians on the development of NAFLD can be very important in the strategy of the prevention of NAFLD. Educational tools, including mass media, should be used to raise awareness of NAFLD.

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