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Is Single Dietary Treatment Effective on Serum Lipids and Aminotransferases in Overweight Patients?

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ABSTRACT

Objective: The aim of this study is to confirm the effect of one month dietary treatment on the level serum lipids (cholesterol and tryglicerides) and aminotransferases in overweight patients aged over 50 years. **Methods:** In agreement with the respondents we requested that they immediately only reduce consumption and that in the reporting period use only food without the use of pharmacotherapy (fat lowering agents and lipid lowering medications). The reason for this assumption is that there is physiological variation for biochemical and hematological examinations by number of internal and external influences determine the size of physiological changes, as well as the necessity of the necessary concentration of certain nutrients for basal metabolism, and function of the body–cells or metabolites. These same subjects, we monitored the frequency of the results, the results of blood glucose, cholesterol, triglycerides, aminotransferase, acidum uricum creatinine after 1 month. The study was carried out on a targeted sample of 10 respondents in the Primary health care center in Gracanica for a period of 30 days. The tests on this sample were conducted survey on health status and nutrition, HIV treatment and diagnosis. **Findings:** Thee results show that there is an increased number of obese subjects. The paper analyzes the results of biochemical tests in subjects aged over 50 years. On the target medical and biochemical laboratory diagnostic examinations in 10 subjects of both sexes were observed: elevated results of blood glucose, cholesterol, triglycerides, aminotransferase, uric acid and creatinine. It was also observed the fact that most patients was with increased body mass (BMI = and> 25). It has been observed continuous decline or normalization of laboratory test results after one month. **Conclusion:** There is a growing number of people who are overweight (BMI 25-30) and obese (BMI> 30) due to poor habits, which is dominated by excessive calorie intake. Due to the increased supply of food nutrients: glucose and/or triglyceride, cholesterol, protein in the body, there is increase in the metabolism of carbohydrates, proteins, non-protein compounds, purine and lipid, with an intense oxidative processes in the mitochondria in particular fat cells and liver disorder utilization of glucose, lipids, purine. As a consequence, the pathological results: higher levels of glucose in the blood, cholesterol, triglycerides, uric acid, creatinine and aminotransferase were observed.
Key words: laboratory results, metabolism, obesity, nutrition, fat lowering agents.

1. INTRODUCTION

Increased body mass index (BMI) in a human usually accompanies increased results of aminotransferase, blood glucose, total cholesterol, triglycerides, uric acid, creatinine, urea, mean corpuscular volume (MCV) of erythrocytes and osmolality of urine. Statistical analysis of correlation coefficients and variations, just like that made "reference values" would allow adequate assessment of individual results of laboratory analysis (1).

Because of the poor habits today as a result of excessive calorie intake, there is an increase in the number of people who are overweight (BMI 25-30) and obese (BMI> 30). Numerous studies are now focused on monitoring the value of biochemical and hematological tests depending on the different living habits (2,3,4). Continued over-supply of energy results in disorders of glucose metabolism, lipoproteins, and changes of purine metabolism. Such hyper energetic condition occurs due to the increased supply of food nutrients including glucose and/or triglyceride, cholesterol, protein in the body that accompanies an increase in carbohydrate, protein and non-protein compounds, purine and lipid, with more intense oxidative processes in the mitochondria in particular fatty liver cells. Below is a disorder of glucose utilization, lipids, purine resulting pathological results of medical and biochemical diagnostics.

The liver is the main laboratory of the organism in which the metabolism of consumed nutrients into the body with the participation of many different enzymes take place. Therefore, laboratory diagnosis is widely used in the diagnosis of the functional state of the liver disorder which also results in pathologic

results of medical and biochemical diagnosis of glucose, lipids, and purines as a marker of liver status (5). Meanwhile, serum level of Glucose in the blood could be considered as an indicator of the health status of the liver (6). Elevated cholesterol and triglyceride results are an indication of the condition of blood vessels and liver steatosis (7). In case of bad habits, today we have uneven or increased intake of necessary and unnecessary nutritients and we have a metabolic disorder and disorder of functional body status and health. There should be balance in input but also take into account the physiological variations in the results of biochemical and hematological tests because many internal and external influences determine the size of physiological changes. Also, there is the necessity of the necessary concentration of certain nutrients for basal metabolism and the functioning of the organism, cells or metabolites (8).

The aim of this study is to confirm the effect of one month dietary treatment on the level serum lipids (cholesterol and tryglicerides) and minotransferases in overweight patients aged over 50 years. Also, our aim was to compare the results medical and biochemical diagnostics: glucose, lipids: total cholesterol, triglyceride levels in two blood sampling by the change in eating habits, or taking food in different manner in a certain period without pharmacotherapy. Changes caused by food type dietary supposed to influence the level changes observed in biochemical parameters in the sample. The way we wanted to reach such knowledge was to conduct an analysis or medical and biochemical diagnosis in ten patients with established pathological values of certain parameters in the blood that deviated from the standard values, and taking blood samples twice–first before change in the diet and other taking blood after 30 days of changed diet.

2. METHODS

The study was prospective and was done in the period of the calendar year 2014 in the biochemical laboratory of the Primary Health Center Gracanica. The sample was representative, selective, of both sexes, aged 50 years and consisted of 10 respondents. During the first phase of the research subjects were recorded with increased BMI (BMI> 25), which was developed set of biochemical analysis of blood, and then they recorded patients with pathologically elevated results of biochemical analysis: glucose, lipids: total cholesterol, and triglycerides. In the second stage was carried out by blood sampling in patients who were enrolled in the study and they were recommended change in eating habits, or food intake without medications. These patients–respondents, 30 days after the change in the diet repeated the blood tests were done and a biochemical analysis. They then compared and analyzed the results of biochemical tests in subjects–before a change in diet and 30 days after the change in diet. Biochemical laboratory analyzes were performed on a biochemical analyzer SIEMENS. Subjects will be interviewed on BMI and life habits, and consumption of food and alcohol. Obtained results were statistically analyzed and presented in tables and charts. The statistical analysis used Chi-square and T-test.

3. RESULTS

Analysis of the results with the two blood sampling before and after the change in eating habits

and without pharmacotherapy: 1. before change in diet and 2. after 30 days of diet change shows metabolic changes in nutrient glucose, cholesterol and triglycerides, or 27% drop in glucose results, 22% decline in the results of cholesterol levels and 51% decrease in triglyceride levels. Elevated levels were: glucose, cholesterol, triglyceride levels and are an indicator of the need for preventive action (12) and the real cost-benefit. Based on the analyzed demographic data (gender, age, duration of diet) it was observed that the results are often pathological or tests of: glucose, lipids, purine in the obese people which means those with increased BMI and poor eating habits (1). Obesity is one of the most important causes of elevated levels during biochemical analysis in serum of the patients (4). Therefore, in this paper, as now many studies focus on monitoring the value of biochemical-hematological tests and BMI depending on the different living habits as excessive and indiscriminate consumption of food and taking drinks (alcohol) and supplements lead to an increase in the results of biochemical tests (5).

We analyzed subjects with increased BMI and pathological, elevated results of biochemical analysis: glucose, lipids, total cholesterol and triglycerides, as in the second blood sampling after 30 days of the change in eating habits and drink, without pharmacotherapy.

This is indirectly shown that reduction in body mass and change in eating/drinking habits results in a significant lowering of the pathological test results: blood glucose, total cholesterol, and triglycerides. In this research it was shown that the loss of body weight and changes in eating/drinking habits is important, first and possible factor without using pharmacotherapy in normalization of blood glucose, total cholesterol, triglycerides such nutrients that usually have excessive intake. After 30 days of hygienic-dietary regime we had percent drop in results: glucose 17-37 (27%), cholesterol 15-34 (22%) and triglycerides 45-73 (51%).

4. DISCUSSION

Numerous studies are now focused on monitoring the value of biochemical-hematological tests depending on the different living habits (12). Obesity is one of the most important causes of elevated biochemical and hematological tests.

Obesity increases the risk of liver disease, cardiovascular disease (9), metabolic syndrome and malignancy. Next disorder of glucose influence on lipid metabolism causes an increase in the concentration of triglycerides (10).

Respon-dent	FSB			Total cholesterol			Triglycerides		
	Before	After	% change	Before	After	% change	Before	After	% change
1	8.70	6.70	23.00	6.90	5.90	15.00	3.36	2.17	36.00
2	8.60	6.80	21.00	6.70	5.60	17.00	3.78	1.67	56.00
3	8.00	5.30	34.00	5.90	4.50	24.00	2.67	1.27	53.00
4	7.10	5.20	27.00	5.90	4.60	22.00	5.67	1.56	73.00
5	8.00	5.00	37.00	6.70	4.80	29.00	2.36	1.09	54.00
6	6.80	4.90	25.00	8.00	5.30	34.00	2.26	1.25	45.00
7	6.90	4.80	31.00	7.70	4.40	17.00	2.30	1.07	45.00
8	7.00	5.10	57.00	6.90	5.40	22.00	2.50	1.03	50.00
9	6.80	5.00	57.00	7.60	6.00	21.00	2.98	1.48	51.00
10	5.90	4.90	17.00	7.30	6.10	17.00	3.18	1.55	51.00

Table 1. Results of pathological laboratory tests: before the change in diet and 30 days after diet change with percent drop in pathological results.
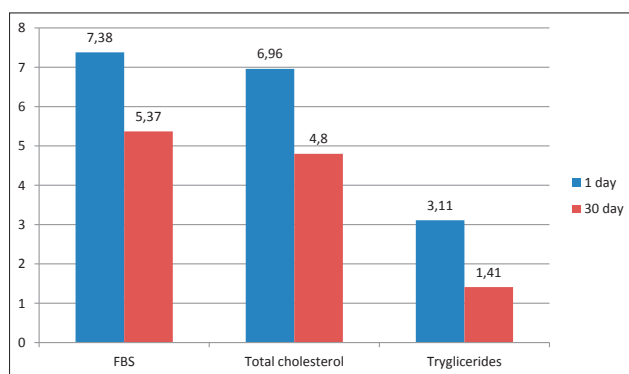
Figure 1. Mean values of the followed parameters before and after the diet change

In our study involving 10 patients, aged 50 years of both

	1 day	30 day	t	p
FBS	7.38±0.9	5.37±0.74	11.805	0.000
Total cholesterol	6.96±0.71	4.8±0.97	7.898	0.000
Triglycerides	3.11±1.03	1.41±0.34	5.939	0.000

Table 2. Mean values of the followed parameters before and after the diet change

sexes, nine had increased body mass index. In our results in these subjects we have obtained significantly elevated glucose results, total cholesterol, triglycerides with respect to the upper reference value. In this study we have based on tests which have shown that the loss of body weight and changes in eating habits and drink are important, first and possible factor without using pharmacotherapy in normalization of blood glucose, total cholesterol and triglycerides.

In many studies it was concluded that the values of body mass index correlated with the values of the indicators of abnormal lipid and abnormal metabolism of carbohydrates. In 69% of cases of elevated aminotransferase activity was unexplained and was associated with obesity, accompanied by elevated triglycerides, low-insulin and low HDL-C in both sexes, as well as type 2 diabetes and hypertension in women. After 30 days of hygienic-dietary regime we had percent decrease in results: glucose 17-37 (27%), cholesterol 15-34 (22%) and triglycerides 45-73 (51%).

The indiscriminate use of drugs especially lipid lowering drugs (statins) in many cases is not necessary or causes severe toxic reactions (11). Empirical therapy may be more harmful than helpful because often unjustifiably used for prophylactic purposes and not in the therapeutic applications as a consequence of new health problems. There are physiological variations of metabolites and the results of biochemical and hematological tests, and a number of internal and external influences determine the size of physiological changes; or necessary certain concentrations of certain nutrients for basal metabolism and the functioning of the organism; cells or metabolites (hormones, vitamin D). As a consequence, the economic problems because of the steady increase in the total cost of the medication and the patient and the health insurance fund.

In our research results shown that empirical pharmacotherapy during the first medical and biochemical laboratory diagnostic review of patients with elevated results were: blood glucose, cholesterol, triglycerides, aminotransferase, uric acid and creatinine should be critical. A single nutritional treatment (without pharmacotherapy) can significantly decrease serum lipids and normalize serum transaminases in overweight patients over 50 years.

5. CONCLUSION

Because of the poor dietary habits today as a result of excessive calorie intake, we increased the number of people with overweight (BMI 25-30) and obesity (BMI> 30). Due to increased food intake and non selective alcohol use, we usually see elevated results of laboratory tests among obese people. In these studies it was shown that the body weight in correlation with pathological results in 9 patients. The subjects with pathological; elevated results of biochemical tests: glucose, lipids, total cholesterol and triglyceride levels in the second extraction of the blood sample to the change in eating habits and drink after 30 days without pharmacotherapy had significantly declining results, or a combination of proper nutrition can normalize mildly pathological results. Follow and decrease glucose utilization disorders, lipids, purine and improve their health.

We believe that this study may be a topic of research in the field of health care organizations, pharmacoeconomics and pharmacoinformatics and that the results of research, tested classical economic analysis, cost-benefit, cost-effectiveness, cost-rationality, cost-efficacy will allow good insight into spending significant funds and other resources in the field of pharmacoeconomics for which we believe that in the current situation is substantial, and that based on the above analyzes of the appropriate benefit in terms of rationalization of pharmacotherapy in the future. Therefore, we believe that the change in eating habits has a very high social and economic importance in terms of better and better organization of one of the major health system–primary care or family medicine. Damages to health which may arise are due to poor quality or feeding habits due unnecessary administration of the drug in the liver as a result of disturbed metabolism can lead to the formation of toxic metabolites. Hence the name is justified toxic effect of food, drink or medication. Application of drugs specifically lipid lowering drugs should be critical because of serious toxic reactions.

Always must be observed the principle "prevention is better than cure" only the continuous monitoring of the patient. What matters is the proper diet and lifestyle habits and preventive action (12) and solving other causes of elevated biochemical searches before pharmacotherapy.

CONFLICT OF INTEREST: NONE DECLARED.

REFERENCES

1. Skendzel LP, Barnett RN, Platt R. Medically useful criteria for analytic performance, 1985.
2. Salihbašić Š, Bešlagić Z, Sarihodžić M. Ekonomske pretpostavke za reformu zdravstvenog sistema i realizacija ciljeva zdravlja u 21. stoljeću. Mater Sociomed. 2003; 15(1-2): 3-7.
3. Mašić I. Reforme zdravstvenog sistema u BiH. Med Arch, 1998; 52(1): 3-4.
4. Janovsky K. Health Policy and Systems Development. An Agenda for Research. World Health Organization, Geneva, 1996: 245.
5. International Statistical Classification of diseases and related health problems, tenth revision. World Health Organization, Geneva, 1992.
6. Medunarodna klasifikacija bolesti i srodnih zdravstvenih problema (10. revizija). Svezak 1. Zagreb:Hrvatski zavod za javno zdravstvo, 1994.
7. Medunarodna klasifikacija bolesti i srodnih zdravstvenih problema (10. revizija). Svezak 2. Zagreb:Hrvatski zavod za javno zdravstvo, 1994
8. Consensus Conference. Lowering blood cholesterol to prevent heart disease. JAMA. 1985; 253(4): 2080-2086.
9. European guidelines on cardiovascular disease prevention in clinical practice. Third Joint Task Force. European Journal of Cardiovascular Prevention and Rehabilitation. 2003; 10,Supplement 1: S2-S63 .
10. Harrison H. Principi interne medicine, prevod trinaestog izdanja knjige Principles of Internal medicine. Placebo, Split, 1997.
11. Rang HP, Dale MM, Ritter JM, Moore PK. Farmakologija/Pharmacology, 5th edition, prevod. Data status, Beograd, 2005.
12. Williamson DF. The Prevention of Obesity. N Engl J Med. 1999; 341: 1140-1141.