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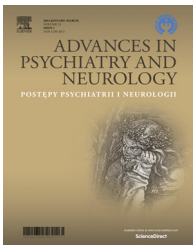

Review/ Praca poglądowa

Nutritional proceedings in schizophrenia

Postępowanie żywieniowe w schizofrenii

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ABSTRACT

Objective: The purpose of this review is to check the current knowledge of the nutritional proceedings in schizophrenia. **Review:** Patients with schizophrenia, except for their primary diagnosis, suffer from many additional diseases, with metabolic syndrome mentioned among them, which may be the cause of excessive weight. People with schizophrenia often have abnormal eating habits, and the introduction of principles of rational nutrition and increased physical activity can have a positive impact on the improvement of the somatic condition. Therefore, it is important to note the role of individual nutrients in schizophrenia without administration of pharmacology. **Conclusions:** Some of the main nutrients, the importance of which are extensively studied, are polyunsaturated fatty acids (PUFA), vitamins, antioxidants, micro-/macroelements, and proteins. An important issue regarding nutrition in these patients is also the calorific value and selection of proper diet, which could be the Mediterranean diet, as studies have confirmed that it has a good effect on weight loss and is rich in PUFA.

Introduction

Schizophrenia is one of those mental disorders which constitute the greatest challenge for psychiatry. Its course is chronic, and clinical outcomes of the disease severely affect the patients' daily functioning. According to current practice in psychiatry, the diagnosis of the disorder consists in reference to the criteria from ICD-10 or DSM-IV. There is a reported comorbidity of schizophrenia and other disorders. Research shows that 35–70% of patients diagnosed with the disease suffer from serious somatic conditions as well [1]. Among them there are obesity, diabetes, cardiovascular diseases and metabolic syndrome. Increased risk of

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comorbidity is further influenced by factors such as patients' unhygienic lifestyle, smoking, little physical activity, lack of adherence to basic dietary requirements and premorbid physical condition.

It is necessary to also take into account the administered pharmacotherapy, which is supposed to reduce psychotic symptoms. Antipsychotic medication differs as regards the occurrence of adverse events – certain drugs may cause metabolic disorders. One of the possible side effects of the use of antipsychotic drugs is fast weight gain, which leads to eventual obesity [2]. It is estimated that around 58–73% of patients on antipsychotic medication struggle with abdominal obesity, which significantly increases the risk of metabolic syndrome [3]. Neuroleptics such as Clozapine and Olanzapine may cause weight gain – within the first weeks of therapy the reported weight gain in patients is 2–9 kg [4]. Weight gain normally occurs at the beginning of therapy and is significantly higher in patients with lower initial BMI [5].

An important factor in management of patients with schizophrenia is attention to their eating habits and intake of nutrients, the right selection of which may help in both reduction of symptoms of concomitant somatic disorders and the treatment of schizophrenia itself, by influencing patients' cognitive function and improving their mood [6].

Metabolic syndrome (MS) in schizophrenia

Diagnosis of metabolic syndrome in schizophrenia patients is 2–3 times more common than in a healthy population (37–63%) [7]. It stems, on the one hand, from the patients' unhealthy lifestyle, and on the other, is caused by side effects of used medication. In the course of therapy, the patients' diet is fading into the background, the main emphasis being placed on pharmacological management of the disease, and psychotherapeutic and social support [7]. In too many of those patients somatic disorders remain undiagnosed and in consequence not treated.

Weight gain, as one of the components of MS, causes increase of low-density lipoprotein (LDL) concentration and decrease of high-density lipoprotein (HDL) concentration. Patients also manifest impaired carbohydrates metabolism, with observed higher glucose levels in 15% of first-time treated patients [8]. Lindermayer et al. demonstrate that administration of antipsyhotics such as Clozapine, Olanzapine and Haloperidol cause increase of blood glucose levels, and Olanzapine and Clozapine may be responsible for increased cholesterol levels [9]. Patients with mental disorders may potentially lose between 25 and 30 years of regular life as compared with general population, especially due to premature cardiovascular mortality [10].

Schizophrenia patients tend to lead a sedentary lifestyle. Their weekly physical activity is estimated at ca. 26% compared to healthy individuals' 34% rate [11]. Negative symptoms typical in schizophrenia include lack of initiative and social withdrawal, which often leads to little activity. Inertia and decreased motivation to act may also hinder leading a healthy lifestyle, and lack of insight may reduce the possibility to implement health promotion activity such as adherence to basic rules of rational nutrition [12]. Weight loss is possible with the use of complex intervention programs for psychotic patients, e.g. Melamed et al. demonstrated that nutritional and behavioral interventions together with increased physical activity, lasting 3 months, lead to a significant weight loss [13, 14].

A study carried out by Ratliff et al. shows that compared to the control group, schizophrenia patients had a significantly higher level of glycated hemoglobin and insulin. Moreover, they had a bigger waistline and higher diastolic blood pressure. Daily energy intake did not differ between the groups; still, schizophrenia patients consumed substantially more sugar and fatty food [15].

Schizophrenia patients display poor eating habits, their diet is mainly rich in saturated fats and low on fiber and fruit. Such a diet may increase the risk of developing metabolic disorders or deteriorate those caused by other factors, among which apart from those already mentioned may be found smoking, alcohol or other substance abuse [16]. The nutrients, the importance of which in schizophrenia patients is currently extensively researched, constitute i. a. polyunsaturated fatty acids (PUFA), vitamins, antioxidants, micro/macroelements, and proteins.

Polyunsaturated fatty acids (PUFA) in schizophrenia

In proper functioning of human body, polyunsaturated fatty acids like omega-3 and omega-6 play a crucial role. PUFA are one of the important elements supporting the development of central nervous system (CNS). There is a certain link between consumption of omega-3 fatty acids and treatment of mental disorders, however there were no records about such link with the omega-6 fatty acids. The most important of the omega-3 fatty acids group are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) [17]. Those acids cannot be synthesized alone by our organism, which is why they must be supplied with food that contains them. In this case the best source of omega-3 fatty acids is saltwater fish. Various studies show that diets of patients with schizophrenia are poor in PUFA and their metabolism is distorted. Reduced levels of PUFA in the membranes of neurons may stem from excessive production of free radicals and increased lipid peroxidation. In people suffering from mental illness, there is a significant loss of PUFA through excitotoxicity processes and oxidative stress. Assies et al. demonstrated low concentration of omega-3 acids in erythrocytes, cell membranes and in the diet of schizophrenia patients as compared to healthy controls [18]. A deficiency of essential fatty acids may increase the risk of suicide and cardiovascular disease, which are the cause of premature death in patients with psychotic disorders [19].

There were also studies of people high at risk of developing schizophrenia, aged from 13 to 25 years old, which used a 12-week intervention in the form of administration of 1.2 g/day of PUFA or placebo and then observation over a period of 40 weeks. It was shown that omega-3 fatty acids reduce the risk of the transition into psychotic disorders, which can be an effective strategy in the prevention of the development of mental illnesses in young people [20].