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Diet in the Management of Functional Dyspepsia: Controversial and Unresolved Issues

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Aim: to analyze publications devoted to the study of the role of food in the occurrence of functional dyspepsia (FD), as well as the possibilities of using dietary nutrition in its treatment.
Key points. Many studies have shown that spicy food, food with a high content of saturated fats, coffee, carbonated drinks can lead to symptoms of FD. Intolerance to certain foods (in particular, wheat) may be associated with their ability to act as allergens. A number of studies have noted that elimination diets (a diet with a low content of FODMAP products and a gluten-free diet) reduce the severity of dyspeptic disorders, however, there is no convincing evidence of the effectiveness of these diets.
Conclusion. The role of nutrition in the occurrence of FD and the possibility of using various diets in its treatment have not been sufficiently studied and require further research.
Keywords: functional dyspepsia, food, dietary treatment
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Место диетотерапии в лечении функциональной диспепсии: спорные и нерешенные вопросы

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Цель: провести анализ публикаций, посвященных изучению роли различных продуктов питания в возникновении функциональной диспепсии (ФД), а также возможностям применения диетического питания в ее лечении.
Основные положения. Во многих работах показано, что острая пища, пища с высоким содержанием насыщенных жиров, кофе, газированные напитки могут приводить к возникновению симптомов ФД. Непереносимость определенных продуктов (в частности, пшеницы) может быть связана с их способностью выступать в роли аллергенов. В ряде работ отмечено, что элиминационные диеты (диета с низким содержанием продуктов FODMAP и аглютеновая диета) уменьшают выраженность диспепсических расстройств, однако убедительные доказательства эффективности данных диет отсутствуют.
Заключение. Значение питания в возникновении ФД и возможности применения различных диет в ее лечении изучены недостаточно и требуют дальнейших исследований.
Ключевые слова: функциональная диспепсия, продукты питания, диетическое лечение
Конфликт интересов: авторы заявляют об отсутствии конфликта интересов.

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Functional dyspepsia (FD) is one of the most common functional gastroduodenal disorders [1]. The connection of its symptoms (first of all, such as a feeling of fullness in the epigastric region and early satiety) with food intake makes it relevant to study the question of what foods can act as a “trigger” of dyspeptic disorders and what diets it is advisable to prescribe to such patients during treatment.

According to the data available in the literature, the list of foods that can cause symptoms in patients with FD is quite extensive. These include foods high in saturated fats, red peppers, onions, mayonnaise, watermelons, fruit juices, coffee, sodas [2–4]. The

relationship of intolerance to certain foods with a specific dyspeptic symptom is shown. So, it was noted that epigastric pain and epigastric burning correlated with the use of onions, peppers, milk, cheese, chocolate, pineapple, coffee; postprandial fullness in the epigastric region — with the intake of onions, beans, bananas, soft drinks; early satiation — with the use of red meat, fried foods, sausages, eggs, mayonnaise, milk, bread, pasta, beans, bananas [5].

In turn, some fruits (apples, quince), oil extract of peppermint and caraway seeds, rice, ginger, lollipops can contribute to a decrease in the severity of FD symptoms [3]. S.-R. Tabian et al. [6] assessed the relationship between fruit and vegetable consumption and the occurrence of FD and found an inverse correlation between the amount of fruit consumed and the presence of FD symptoms (especially early satiation and postprandial fullness in the epigastric region after meals). A high vegetable diet was associated with a lower risk of developing FD in the men.

D.A. Norwood et al. [7] studied nutritional characteristics in 151 patients with functional gastrointestinal (GIT) diseases (including patients with FD) living in rural areas of Western Honduras and found an inverse correlation between functional gastrointestinal disorders and bean consumption (odds ratio (OR) = 0.41). In contrast, individuals who consumed more than four corn tortillas per day had more clinical symptoms of FD (OR = 1.75).

J. Xu et al. [8] conducted a survey of 203 patients with symptoms of FD, and 936 individuals in the control group who did not have dyspeptic symptoms. The survey showed that 75.9 % of patients with FD symptoms and only 37.5 % of the control group had various nutritional disorders. At the same time, such disorders as irregular meal patterns, coffee consumption occurred in patients with both clinical variants of FD; additional alcohol consumption in patients with epigastric pain syndrome; eating at night, eating fatty and spicy foods, dining out — in postprandial distress syndrome.

Mechanisms by which foods contribute to dyspeptic symptoms may be different. Thus, red pepper realizes its action due to the alkaloid capsaicin, the intake of which was even proposed as a diagnostic test for FD [9]. A diet high in saturated fats can alter the composition of the intestinal microbiota, increase intestinal permeability, increase the production of cholecystokinin, stimulate the formation of hydrophobic bile acids that destroy the protective barrier of the gastric and duodenal mucosa [10, 11].

Finally, a patient's hypersensitivity to certain foods may play an important role in causing dyspeptic symptoms. F.W. Ismail et al. [12] studied hypersensitivity of patients with functional disorders of the gastrointestinal tract (including patients with FD) to food allergens such as meat, shrimp, egg white, milk, peanuts and soybeans using a serological method. The presence of hypersensitivity was concluded in cases where patients with positive results of serological testing on the background of an elimination diet prescribed for 4 weeks noted the disappearance of clinical symptoms, while the resumption of food containing this allergen led to a relapse of symptoms. Hypersensitivity (most often to shrimp and egg white) was detected in 8 out of 200 (4 %) patients with FD. An increase in the content of eosinophils and intraepithelial cytotoxic T-lymphocytes in the duodenal mucosa in some patients with FD confirms the role of immune disorders in the genesis of this disease and may indicate that they have hypersensitivity to certain food components in the form of a non-IgE-mediated food allergy [13].

The significant role of impaired gastric accommodation and slowing of gastric emptying in the pathogenesis of FD makes it reasonable to recommend small frequent meals and slow food intake [1, 4, 5, 14]. In addition, patients are advised to limit their alcohol intake to 10 drinks per week [14].

When it comes to specific diets recommended for patients with FD, as in the treatment of patients with irritable bowel syndrome (IBS), the most popular diet here is a low FODMAP diet (the latter term is an abbreviation of the English words: fermentable oligosaccharides, disaccharides, monosaccharides and polyols). Vegetables (artichokes, asparagus, beets, broccoli, cabbage, onions), wheat and rye products (bread, pasta, crackers), legumes (lentils, beans), fruits (watermelon, peaches, persimmons) are characterized by a high content of fermentable monosaccharides. Disaccharides (lactose) are found in large quantities in milk and dairy products (yogurt, cheese, ice cream); monosaccharides (fructose) — in apples, pears, mangoes, melons, honey; polyols — in apples, apricots, cherries.

Foods low in oligosaccharides include carrots, cucumbers, tomatoes, potatoes, spinach; disaccharides — lactose-free dairy products; polyols — bananas, blueberries, grapes, oranges, tangerines, lemons [15].

Data on the effectiveness of the low FODMAP diet in FD patients are conflicting. On the one hand, it has been shown that this diet leads to a significantly greater reduction in the severity of dyspeptic symptoms compared to the standard diet [16]. On this basis, J. Tack et al. [17] believe that the low FODMAP diet has proven to be effective and can be recommended for use in clinical practice.

On the other hand, it was noted that this diet, in comparison with the standard one, is more effective only in postprandial distress syndrome [18] and therefore can only be recommended in this clinical variant of FD [11]. Some authors believe that it can be prescribed only when FD and IBS are combined [14, 19]. P. Adibi et al. [20] studied the effect of the low FODMAP diet on the manifestations

of dyspepsia (including FD) using a validated questionnaire and showed that this diet significantly increases the risk of postprandial fullness in women (OR = 2.41; p = 0.084). Thus, the efficacy of the diet low in FODMAP remains controversial.

Evaluation of the effectiveness of a gluten-free diet in the treatment of FD is currently attracting much attention. It is known that coeliac disease can present with symptoms suggestive of dyspepsia and therefore is included in the range of differential diagnostic search in the diagnosis of FD [21]. However, along with the typical forms of this disease, characterized by the detection of antibodies to gliadin, endomysium and tissue transglutaminase, as well as typical morphological changes in the duodenal mucosa, in recent years a condition has been identified in which eating food containing gluten is accompanied by the appearance of clinical symptoms, similar to celiac disease, in the absence of its serological and morphological markers. This condition has been termed non-celiac gluten sensitivity (NCGS) [22].

In the literature, the terms "gluten intolerance", "wheat sensitivity", "non-celiac wheat sensitivity" and "wheat intolerance" are also used as synonyms for this condition [5].

P. Duncanson et al. [3] conducted a systematic review of 16 studies, and six of them noted the ability of food containing wheat flour to cause symptoms of FD. The authors hypothesized that the increase in the content of eosinophils in the duodenal mucosa may be due to wheat acting as an allergen. A survey of 3542 Australians showed that wheat intolerance in the population is 14.9 % [23].

V. Shahbazkhani et al. [24] followed up 77 patients with refractory course of FD, in whom symptoms persisted after eradication of Helicobacter pylori infection, 8 weeks of taking proton pump inhibitors, followed by 4 weeks of taking amitriptyline and domperidone. Further, these patients were prescribed a gluten-free diet for 6 weeks. In 35 % of patients, while following a gluten-free diet, a decrease in the severity of dyspeptic symptoms was noted. After the resumption of gluten-containing meals, 18.5 % of patients who responded to a gluten-free diet (6.4 % of all patients with refractory FD) had symptoms recurrence, indicating the presence of NCGS. Characteristically, against the background of a gluten-free diet, there was also a disappearance of such complaints as general weakness, muscle and bone pain, and headache. Given the high incidence of NCGS in patients with refractory FD, introducing a gluten-free diet can be considered, according to the authors, as a "diagnostic and therapeutic roadmap".

However, not all authors agreed on the true efficacy of a gluten-free diet in patients with FD. L. Elli et al. [25] observed 22 patients with FD who were prescribed a gluten-free diet for 3 weeks. At the same time, 18 patients (81.8 %) responded to the diet with the disappearance of clinical symptoms, however, after returning to the intake of food containing gluten, dyspeptic symptoms resumed only in 4 patients (18.2 %), which indicated the presence of true NCGS and the possibility of a placebo effect of a gluten-free diet in the rest. In addition, some authors believe that since wheat contains not only gluten, but also FODMAP products, the effectiveness of such a diet may be due to the increased sensitivity not to gluten, but to other components [11]. Nevertheless, the literature presents the point of view that a gluten-free diet can be empirically used for 4–8 weeks, followed by continuation in cases where a significant reduction in the severity of dyspeptic symptoms was achieved against its background [14].

Among other diets that can be prescribed to patients with FD, the literature also mentions the Mediterranean diet, which is characterized by a high content of fresh vegetables and fruits, olive oil, dairy products and a low content of meat and eggs. It has been shown that young patients with FD have a lower adherence to the Mediterranean diet compared to healthy ones, and compliance with it can give them a good therapeutic effect [26].

Assessing the advisability of prescribing certain diets to patients with FD, many authors note the lack of randomized controlled trials of their effectiveness [5, 11, 14]. At the same time, long-term compliance by patients with restrictive and often expensive diets can lead to violations of their nutritional status [5]. Of course, the selection of a diet for patients with FD should be carried out taking into account their individual tolerance of certain products, which is determined on the basis of regular maintenance by patients of a "food diary". It is characteristic that in the "Rome criteria" of the FD IV revision, which serve as recommendations for practitioners on the diagnosis and treatment of this disease, none of the elimination diets is mentioned [1].

In 2021, a consensus meeting of the European Society of Neurogastroenterology and Motility (ESNM), dedicated to the pathogenetic and clinical aspects of FD, was held online. In conclusion, the experts limited dietary recommendations to such patients only by the advisability of frequent and small-size meals with limited high-fat food items, and emphasized the need for large, randomized trials to assess the contribution of nutritional factors to the onset of clinical symptoms and to determine the place of dietary nutrition in the treatment of patients with FD [27].

Thus, the analysis of publications about the role of nutrition in the development of FD and its treatment shows that this problem is currently not well understood and requires further research.

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