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Dietary management and lifestyle changes in functional dyspepsia

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Abstract

Functional dyspepsia (FD) is a common gastrointestinal disorder whose symptoms can improve through dietary interventions and lifestyle modifications. Up to 88% of patients with FD follow specific diets, with the low FODMAP diet being the most common. This diet has shown benefits, particularly in patients with abdominal distension and postprandial discomfort, although its effect does not always exceed that of traditional recommendations. Conversely, FODMAP consumption has been associated with an increased risk of chronic dyspepsia, particularly in women. A gluten-free diet may be useful in cases of non-celiac gluten sensitivity, especially in patients with FD refractory to pharmacological treatment. However, these restrictive diets should be monitored due to the risk of nutritional deficiencies and psychological effects. Certain foods, such as those containing fats, caffeine, alcohol, and capsaicin, have been associated with dyspeptic symptoms. Although the evidence is mixed, moderating their consumption is recommended. The importance of meal patterns is also emphasized: meal preparation, quantity, and speed of intake may have more influence than frequency. Finally, moderate exercise may be associated with lower prevalence of FD, although the results are not conclusive. In conclusion, dietary and lifestyle modifications are relevant and safe strategies in the management of FD, but they must be individualized, evidence-based, and supervised by healthcare professionals.

Keywords: Functional dyspepsia. Dietary intervention. Lifestyle.

Manejo dietético y cambios en el estilo de vida en la dispepsia functional

Resumen

La dispepsia funcional (DF) es un trastorno gastrointestinal común cuyos síntomas pueden mejorar mediante intervenciones dietéticas y cambios en el estilo de vida. Hasta un 88% de los pacientes con DF siguen dietas específicas, siendo la más común la dieta baja en FODMAP. Esta dieta ha mostrado beneficios, en especial en pacientes con distensión abdominal y malestar posprandial, aunque su efecto no siempre supera al de las recomendaciones tradicionales. Por otro lado, el consumo de FODMAP se ha asociado con mayor riesgo de dispepsia crónica, en particular en las mujeres. La dieta libre de gluten puede ser útil en casos de sensibilidad al gluten no celíaca, sobre todo en pacientes con DF refractaria al tratamiento farmacológico. No obstante, estas dietas restrictivas deben ser vigiladas por el riesgo de deficiencias nutricionales y efectos psicológicos. Ciertos alimentos, como los que contienen grasas, la cafeína, el alcohol y la capsaicina se han relacionado con síntomas dispépticos. Aunque la evidencia es mixta, se recomienda moderar su consumo. También se destaca la importancia del patrón de comidas: la preparación, la cantidad y la rapidez de la ingesta podrían influir más que la frecuencia. Finalmente, el ejercicio moderado podría estar asociado con menor prevalencia de DF, aunque los resultados no son concluyentes. En

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conclusión, las modificaciones dietéticas y de estilo de vida son estrategias relevantes y seguras en el manejo de la DF, pero deben ser individualizadas, basadas en la evidencia y supervisadas por profesionales de la salud.

Palabras clave: Dispepsia funcional. Intervención dietética. Estilo de vida.

Introduction

Dietary modification and lifestyle changes play a fundamental role in the management of functional dyspepsia (FD) symptoms and may therefore be considered a first-line therapeutic option[1].

Several studies have indicated that certain foods are frequently recognized by patients as triggers of functional dyspepsia symptoms. Among the most commonly reported are dairy products, alcohol, coffee, carbonated beverages, vegetables, spicy foods, gluten, and fats[2].

This article explores the role of dietary management and lifestyle modifications in the treatment of FD.

Low FODMAP Diet

Fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs) are short-chain carbohydrates that are not absorbable in the intestine. They are present in a wide range of foods, including fruits, vegetables, cereals, dairy products, legumes, and various types of sweeteners[3].

In a clinical study of 105 patients with FD, a low FODMAP diet was compared with traditional dietary recommendations over 4 weeks. Both groups improved their overall symptoms, with no significant differences between them (67% vs. 57%; $p > 0.05$); however, patients with postprandial distress or abdominal bloating responded better to the low FODMAP diet ($p = 0.04$). Quality of life scores on the SF-NDI (Nepean Dyspepsia Index Short Form) questionnaire, which assesses five main domains (anxiety, interference with daily activities, ability to enjoy meals, knowledge of the disease, and impact on work or academic performance), improved significantly in both groups. The analysis also indicated that bloating and male sex were factors associated with a better response to this diet[4].

Staudacher et al.[5] evaluated the relationship between a low FODMAP diet and the relief of FD symptoms. The study included 59 patients diagnosed with FD, but the vast majority (81%) also had a diagnosis of irritable bowel syndrome. The patients were divided into two groups: one that received recommendations on a low FODMAP diet ($n = 40$) and another that received standard dietary counseling ($n = 19$). Although adherence to the specific diets did not differ between groups, a significant reduction was observed in both the epigastric symptom score and the total symptom score in the low FODMAP diet group compared to the standard diet group ($p = 0.026$), resulting in a significantly higher proportion of responder patients in the low FODMAP diet group[6].

However, in a cross-sectional study of 2,897 adults, FODMAP consumption was estimated using a food frequency questionnaire, and it was found that a low FODMAP diet was associated with an increased risk of uninvestigated chronic dyspepsia in adults (odds ratio [OR]: 1.85; 95% confidence interval [95% CI]: 1.26-2.78), particularly in women (OR: 2.41; 95% CI: 1.46-3.95). Likewise, a significant association was found with an increased risk of postprandial fullness (OR: 1.38; 95% CI: 1.08-1.78; $p = 0.046$). The authors conclude that the study, although suggesting a relationship between the low FODMAP diet and the risk of chronic dyspepsia and related symptoms, cannot conclusively prove a cause-and-effect relationship, and therefore suggest the need to conduct randomized clinical trials to confirm the findings and better understand the role of FODMAPs and their relationship with upper gastrointestinal symptoms[6].

Gluten-free diet

One of the food hypersensitivities most frequently reported by patients with FD is the adverse reaction to wheat, particularly to the proteins commonly known as gluten[7].

Among cases of functional diarrhea refractory to pharmacological treatment, gluten-dependent functional diarrhea should be considered as a possible clinical manifestation of non-celiac gluten sensitivity. Shahbazkhani et al.[8] reported a randomized, double-blind, placebo-controlled clinical trial in which, of 77 patients with refractory functional diarrhea, 65% did not respond to a gluten-free diet, while 35% showed improvement in gastrointestinal symptoms. Following gluten intake in blinded patients, symptoms reappeared in 6.4% of the total patients with refractory functional diarrhea and in 18% of those who responded to the gluten-free diet, suggesting the presence of non-celiac

gluten sensitivity[8]. As this study demonstrated, non-celiac gluten sensitivity is highly prevalent among patients with refractory functional diarrhea.

In a meta-analysis that included randomized controlled trials conducted in adults with symptoms related to FD to evaluate the effects of gluten challenge, the results indicated a significant increase in the severity of abdominal bloating (weighted mean difference [WMD]: 0.67; 95% CI: 0.37-0.97; I^2 = 81.8%; n = 6), early satiety (WMD: 0.91; 95% CI: 0.58-1.23; I^2 = 27.2%; n = 5), and epigastric pain (WMD: 0.46; 95% CI: 0.17-0.75; I^2 = 65.8%; n = 6). However, the effect of gluten challenge on the severity of nausea (WMD: 0.13; 95% CI: -0.17 to 0.43; I^2 = 0.0%; n = 5) was not significant; therefore, they conclude that gluten restriction could help reduce dyspeptic symptoms[9].

However, we must consider that a prolonged gluten-free diet may lead to deficiencies in vitamins D and B12, iron, zinc, and magnesium, and that restrictive diets may increase hypervigilance and anxiety, contributing to the onset of symptoms and decreased quality of life[10].

Food restriction/elimination diets

Fats

There is a significant association between the ingestion of high-fat foods and symptoms in patients with FD, specifically postprandial fullness and abdominal distension[11].

In a systematic review conducted by Duncanson et al.[11], it was demonstrated that the consumption of a high-fat diet can induce symptoms such as nausea, epigastric pain, and postprandial fullness. The main mechanisms by which fatty foods could exacerbate the symptoms of FD are related to delayed gastric emptying and gastric hypersensitivity. It is known that an intraduodenal lipid infusion can increase the sensitivity of the proximal stomach to distension, triggering dyspeptic symptoms, due to a specific effect of fat on cholecystokinin release[12].

Caffeine

Several studies have linked the increase in gastric acid secretion induced by coffee with gastrointestinal disorders, including gastroesophageal reflux disease, epigastric pain, and heartburn[13]. In one study, when compared with water as a control, coffee was observed to be a considerable stimulant of acid secretion. Both caffeinated and decaffeinated coffee have been associated with a prolonged elevation of serum gastrin[14].

However, in a study of 3,362 adults aged 18 to 55 years, of whom 58.3% were women, a food frequency questionnaire was used to assess dietary intake, and after adjusting for potential confounding factors (sex, age, energy intake, physical activity, smoking, body mass index [BMI]), no significant association was observed between coffee consumption (OR: 1.27; 95% CI: 0.86-1.87) and caffeine consumption (OR: 1.00; 95% CI: 0.99-1.02) with specific symptoms of FD, such as early satiety, postprandial fullness, or epigastric pain[15].

Therefore, it is difficult to reach a definitive conclusion regarding the effects of coffee consumption on dyspeptic symptoms, but it has been observed that patients frequently and spontaneously reduce their consumption.

Alcohol

The effects of alcohol on FD have also been contradictory. Some studies have not demonstrated any relationship between the onset of new dyspeptic symptoms and the severity of dyspepsia, postprandial distress syndrome, or epigastric pain syndrome[11].

On the other hand, a large cohort study with 4,390 subjects demonstrated that there was a relationship between the consumption of more than seven alcoholic beverages per week and the presence of dyspeptic symptoms (OR: 2.3; 95% CI: 1.1-5.0); thus, it is difficult to determine whether alcohol induces symptoms or not[16].

Given that chronic alcohol consumption is not healthy, reducing alcohol intake can be recommended in patients with dyspepsia, as in other conditions.

Capsaicin

Capsaicin is the active compound in chili peppers, responsible for the burning sensation associated with spicy foods. In patients with FD, the consumption of foods containing capsaicin increases symptoms compared with placebo consumption or with healthy controls[12].

Studies have been conducted to investigate primarily the effects of capsaicin in the treatment of functional dyspepsia by addressing the relationship between capsaicin and the transient receptor potential vanilloid type 1. It has been proposed that capsaicin could alleviate the symptoms of functional dyspepsia through

various mechanisms. These effects include the desensitization of C nociceptive fibers, the regulation of various neurotransmitters, the reduction of epithelial inflammation, the balance of the intestinal microbiota, the inhibition of gastric acid secretion, and the reduction of oxidative stress damage[17].

Nevertheless, the evidence regarding its use is limited. Recent studies observed, in patients with functional dyspepsia, that when a dose of 0.50 mg of capsaicin was administered, it induced moderate epigastric pain in 76% of patients. However, in another study, the ingestion of 0.25 mg of capsaicin reported mild symptoms in both patients with functional dyspepsia and healthy controls. It is important to emphasize that the proposed treatment duration should be longer than 1 week; a shorter application may sensitize the chemoreceptors and increase pain perception[18,19].

Therefore, it has been proposed that a complete understanding of these mechanisms will aid in the development and utilization of capsaicin in the fields of nutrition and medicine.

Dietary patterns

Meal frequency

Patients with FD are unable to tolerate large amounts of food and, therefore, tend to decrease the number of meals and calories, and increase the number of snacks, with risk of calorie, vitamin, and mineral deficiency. However, Göktaş et al. found no significant differences in meal frequency between subjects with FD and healthy subjects, as both groups reported consuming three main meals during the day (68.5% vs 70.4%)[17]. Similarly, regarding snack consumption, the investigators found no differences in frequency between the two groups. These results are consistent with those of Çolak et al., who concluded that meal frequency does not influence the triggering of symptoms in patients with FD[20].

The preparation, volume, and speed at which food is consumed may also be associated with dyspeptic symptoms[21].

Lifestyle modifications: exercise

The association between exercise and digestive symptoms remains inconsistent. In a Japanese study with 30 healthy subjects, it was observed that moderate-intensity exercise, but not low- or high-intensity exercise, induces gastric emptying. However, in a Swedish cohort study with 137 participants, exercise was associated with an increase in reflux and vomiting, and with a decrease in diarrhea and nausea[22].

In one study, the prevalence of FD among subjects with no, low, moderate, and high exercise frequency was 2.7%, 1.7%, 1.3%, and 1.3%, respectively. After adjusting for age, sex, BMI, alcohol consumption, smoking, heart murmur, and anemia, an inverse association was observed between low, moderate, and high exercise frequency and FD (the adjusted ORs were: for low frequency 0.69 [95% CI: 0.47-0.997], for moderate 0.53 [95% CI: 0.34-0.81], and for high 0.53 [95% CI: 0.30-0.88]; $p = 0.002$)[23].

Therefore, the relationship between exercise and digestive symptoms, as well as with FD, is neither clear nor consistent. On the one hand, some studies have shown positive effects of moderate exercise on gastric emptying, while others have observed adverse effects, such as an increase in reflux symptoms and vomiting. However, one study suggests that there is an inverse relationship between exercise frequency and the prevalence of FD, indicating that the higher the frequency and intensity of exercise, the lower the prevalence of FD, although this finding requires more detailed analysis and consideration of confounding factors such as age, sex, and BMI, among others.

Conclusions

A low FODMAP diet may be beneficial for FD, especially in patients with abdominal distension and postprandial discomfort, although some studies show no significant differences compared to traditional recommendations. However, FODMAP consumption could increase the risk of chronic dyspepsia, particularly in women. Regarding the gluten-free diet, some patients with non-celiac gluten sensitivity experience improvement, but it should be noted that restrictive diets may cause nutritional deficiencies if not adequately supervised. The consumption of fatty foods worsens FD symptoms, such as postprandial fullness and abdominal distension, while both caffeine and alcohol may trigger digestive symptoms, although the results are not conclusive. Capsaicin from spicy foods could aggravate symptoms in some patients, but its potential therapeutic use is also being investigated. Concerning dietary patterns, the frequency and volume of meals may influence FD symptoms, with some patients opting for more snacks to avoid large amounts of food, which can lead to nutritional deficiencies. Finally, the relationship between exercise and digestive symptoms is

ambiguous; some studies suggest that greater exercise could be associated with fewer dyspepsia symptoms, but it is necessary to consider other factors such as age and BMI.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Protection of human and animal subjects. The authors declare that no experiments have been conducted on human subjects or animals for this research.

Confidentiality, informed consent, and ethical approval. The study does not involve patient personal data nor does it require ethical approval. The SAGER guidelines do not apply.

Declaration on the use of artificial intelligence. The authors declare that they used artificial intelligence (ChatGPT) for the writing of this manuscript in the abstract and conclusions.

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