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Streszczenie w języku angielskim

**EFFECTIVENESS OF SELECTED DIETARY INTERVENTIONS
IN INFLAMMATORY BOWEL DISEASE**

Diet plays an important role in the pathogenesis of inflammatory bowel disease through its influence on the intestinal microbiome and the host's immune system. The emerging scientific reports have significantly expanded our knowledge on dietary interventions in the treatment of gastrointestinal diseases. This series of publications, consisting of a review paper and two original papers, discusses the Crohn's disease exclusion diet in Crohn's disease patients and the low-FODMAP diet in patients with Crohn's disease or ulcerative colitis.

OBJECTIVE

The aim of the first study was to assess the effectiveness of the Crohn's disease exclusion diet for induction of remission in patients with active Crohn's disease and to assess the impact of the elimination diet on inflammatory parameters, nutritional deficiencies and quality of life.

The aim of the second study was to assess the prevalence of irritable bowel syndrome and small intestinal bacterial overgrowth in patients with inflammatory bowel disease in remission, to assess the effectiveness of the low-FODMAP diet in alleviating abdominal symptoms in patients who meet the irritable bowel syndrome diagnostic criteria, comparison of the effectiveness of the low-FODMAP diet depending on the coexistence of small intestinal bacterial overgrowth and assessment of intervention's impact on inflammatory parameters and nutritional deficiencies in patients.

MATERIALS AND METHODS

Two independent, single-centre, prospective clinical trials were conducted. The participants were patients from gastroenterology outpatient centre in Central Clinical Hospital of the Ministry of the Interior and Administration in Warsaw, Poland.

The study on the effectiveness of the Crohn's disease exclusion diet included 32 patients with active Crohn's disease (Crohn's disease activity index >150 points). The dietary intervention lasted for 12 weeks. At the beginning of the study and at weeks 6 and 12, the activity of the underlying disease, the patients' quality of life, blood and faeces laboratory tests, and anthropometric measurements were performed.

The study on the effectiveness of the low-FODMAP diet enrolled 200 patients diagnosed with Crohn's disease or ulcerative colitis who were in clinical remission (Crohn's disease activity index <150 or partial Mayo score <2 points) and faecal calprotectin <250µg/g. The prevalence of irritable bowel syndrome was assessed with the use of the Rome IV questionnaire. In patients diagnosed with irritable bowel syndrome, at the time of the inclusion to the study, laboratory tests, anthropometric measurements, a hydrogen breath test with lactulose was performed, the activity of the underlying disease was assessed, and a questionnaire to determine the severity of the symptoms of irritable bowel syndrome was conducted. Then, regardless of the result of the hydrogen breath test for small intestinal bacterial overgrowth, an 8-week elimination phase of the low-FODMAP diet was introduced. At the end of the elimination phase, laboratory tests, anthropometric tests, a hydrogen breath test with lactulose were performed again, the activity of the underlying disease was assessed, and a questionnaire to determine the severity of the symptoms of irritable bowel syndrome was conducted.

RESULTS

After 6 weeks of Crohn's disease exclusion diet with supplementation of Modulen formula, clinical remission was achieved in 76.7% of patients (95% CI (57.7%; 90.1%)), after 12 weeks - in 82.1% (95% CI (63.1%; 93.9%)). The clinical response at 6 and 12 weeks concerned 83.3% (95% CI (65.3%; 94.4%)) and 85.7% (95% CI 67.3%; 96.0%) of subjects, respectively. There was a statistically significant decrease in faecal calprotectin levels in patients after 12

weeks of treatment compared to baseline ($p=0.021$). In addition, both after 6 and 12 weeks of the diet, there was an improvement in patients' quality of life ($p<0.001$). The intervention had no effect on nutritional parameters and BMI values in patients.

The criteria for the diagnosis of irritable bowel syndrome were met by 32.5% ($n=65$) of patients in remission of inflammatory bowel disease, among whom 80% ($n=52$) were diagnosed with small intestinal bacterial overgrowth. After the low-FODMAP intervention, resolution or relief of abdominal symptoms was observed in 66.1% (95% CI (53.4%; 76.9%)) of the 59 patients with irritable bowel syndrome diagnosed at baseline, for whom data were collected at the end of follow-up. The effectiveness of the low-FODMAP diet in the subgroup with small intestinal bacterial overgrowth was 68.8% (95% CI (53.8%; 81.3%)), in the subgroup without intestinal overgrowth 54.5% (95% CI (28.0%; 78.7%)); $p=0.586$. The dietary intervention was responsible for the resolution of abdominal pain, diarrhoea and bloating. Its effectiveness in relieving constipation has not been observed. After 8 weeks of treatment, a statistically significant decrease in albumin serum concentration and BMI value was observed.

SUMMARY AND CONCLUSIONS

The effectiveness of the Crohn's disease exclusion diet with supplementation of Modulen formula for induction of remission in adult patients with active Crohn's disease has been demonstrated. The intervention, despite its restrictive nature, improved the patients' quality of life. Its negative influence on the parameters of nutritional status in patients was not observed.

In the remission of inflammatory bowel disease, almost 1/3 of patients experienced gastrointestinal symptoms, allowing for the diagnosis of irritable bowel syndrome. It has been proven that the low-FODMAP diet is effective in alleviating abdominal symptoms in patients in remission of inflammatory bowel disease who meet the criteria for the diagnosis of irritable bowel syndrome, regardless of the coexistence of small intestinal bacterial overgrowth. The elimination phase of the low-FODMAP diet may negatively affect the parameters of the nutritional status of patients. For this reason, it should last as short as possible and should be conducted under the supervision of an experienced dietitian.

It has been proven that the low-FODMAP diet is effective among patients with inflammatory bowel disease in remission who meet the diagnostic criteria for irritable bowel syndrome in alleviating abdominal symptoms, regardless of the coexistence of bacterial overgrowth. Considering the elimination nature of the intervention and the risk of nutritional deficiencies, it should be conducted under the supervision of an experienced dietician.

Both original papers showed that diet can be an effective method of treatment for patients with inflammatory bowel disease. It allows to reduce the need to intensify the current pharmacotherapy, and thus - to reduce the exposure to drugs' side effects.