

Eh. A. Emelyanova, A. M. Palshina, S. L. Safonova

CORRECTION OF DISORDERS OF VITAMIN D METABOLISM IN PATIENTS WITH PATHOLOGY OF DIGESTIVE ORGANS AND OSTEOPENIA

ABSTRACT

The article presents the results of a clinical study on the metabolism of vitamin D in patients with gastroenterological pathology and osteopenia. We have developed a comprehensive non-drug method of treatment with fishbone flour and mineral water "Abalakhskaya" that has a positive effect on the functional state of the digestive organs, impaired metabolism of vitamin D and mineral density of bone tissue. 10 women aged 53 to 69 years old of the Yakut nationality are included in the study on a voluntary basis. The average age is 62.9 ± 4.9 years. All of them are in the dispensary control for chronic acalculous cholecystitis and focal atrophic gastritis.

The clinical study included drinking of the Abalakhskaya mineral water (AMB) twice a day in the amount of 400-600 ml / day and fishbone flour at 18 g / day every day for 45 days with two 1.5 monthly intervals. The duration of treatment was 6 months.

The clinical study demonstrated a positive therapeutic effect of the combined use of fish bone flour and mineral water "Abalakhskaya" in elderly patients with gastroenterological pathology and metabolic disorders of vitamin D for the clinical course of diseases, bone mineral density, paraclinical indicators. Developed by us the non-drug method will allow the introducing of personalized medical technologies into practical healthcare.

Keywords: vitamin D, disorders of calcium-phosphorus metabolism, bone mineral density, fish bone flour, mineral water "Abalakhskaya", non-drug treatment.

Introduction. The gastrointestinal tract is one of the main body systems responsible for the absorption and metabolism of vitamin D and its metabolites. In any diseases of the stomach, intestines, liver, gallbladder, pancreas, accompanied by malabsorption syndrome, various expressiveness of exchange osteopathy may occur [1]. The range of metabolic osteopathies in diseases of the gastrointestinal tract can range from a subjective impression of a decrease in bone density according to radiographs to marked osteoporosis with characteristic clinical, radiological and biochemical symptoms [2, 3]. Factors contributing to the disturbance of mineral and bone metabolism are the use of products with low vitamin D content, living in regions with extreme climatic conditions with a long winter period, insufficient solar insolation, negatively affecting all types of metabolism: proteins, fats, carbohydrates, macro- and micronutrients.

Objective: to study the metabolism of vitamin D in patients with pathology of the gastrointestinal tract and osteopenia.

Materials and research methods. The study was conducted at "Educational and research laboratory the Medical Technologies in Gastroenterology" at the "Hospital Therapy, professional Diseases and Clinical Pharmacology" Department of the Medical Institute MK Ammosov NEFU and approved at the meeting of the Local Com in the February 15, 2017, decision No. 1).

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age is 62.9 ± 4.9 years. All of them are in the dispensary control for chronic acalculous cholecystitis and focal atrophic gastritis.

Monitoring of calcium and phosphorus metabolism (levels of ionized calcium in the blood and daily urine, 25 (OH) D - calcidiol and phosphorus in the blood), X-ray densitometry on GE Lunar iDXA, in 3 standard projections (lumbar spine, femoral neck bones, radial bone of the forearm), office measurement of blood pressure, ultrasound (US) of the abdominal organs, esophagogastroduodenoscopy (EFGDS) were held. When interpreting the indicators of bone mineral density (BMD), the densitometric classification of WHO was used (1994). Statistical processing of the material was carried out using the program STATISTICA V6.0 for Windows.

We have developed a comprehensive non-drug method of using Abalakhskaya mineral water and fish bone flour to correct metabolic disorders of vitamin D and mineral metabolism in patients with gastroenterological pathology. The regimen of the Abalakhskaya mineral water drinking was prescribed individually, taking into account the functional state of the stomach and biliary tract.

The clinical study included drinking of the Abalakhskaya mineral water (AMB) twice a day in the amount of 400-600 ml / day and fishbone flour at 18 g / day every day for 45 days with two 1.5 monthly intervals. The duration of treatment was 6 months.

Results and discussion. Patients before the beginning of the course of treat-

ment complained of bitter taste in the mouth, the feeling of lump in the chest, belching with bitterness, bloating, pain in the right hypochondrium and epigastric pain, unstable stools when taking fat, fried food. Also they were disturbed with pain in the knee, hip joints, in the lumbar spine when prolonged static stress, brittle nails, muscle cramps in the limbs, weakness and fatigue. Half of the patients had non-intensive pains in the right hypochondrium and one had moderate-intensity pain syndrome in the right hypochondrium and epigastric area.

After the course of complex therapy, patients noted improvement in overall health, relief of abdominal pain, normalization of stool, improvement of appetite, reduction of pain in joints, lumbar spine, increased physical activity, improvement of the skin, nail plates and hair, which were noted not only by the patients themselves, but also by professionals - masters of a beauty salon.

The intensity of the pain syndrome gradually decreased from the 2nd-3d days and during completely stopped for 5-8 days.

The patients noted the decrease and disappearance the symptoms of gastric dyspepsia at different periods of treatment, depending on the degree of their manifestation, on average after 10 days.

The initially observed expressed flatulence in the patients was neutralized on the 8th day of treatment.

When taking fish bone flour and mineral water "Abalakhskaya" in the observed group, no adverse reactions were recorded, patients were happy to receive treat-

ment.

During treatment, reduction in body weight has been achieved. The average value of body mass index (BMI) before the course of treatment was $28.5 \pm 1.6 \text{ kg} / \text{m}^2$; after treatment - $27.8 \pm 1.5 \text{ kg} / \text{m}^2$.

Endoscopic examination of the stomach in all patients revealed changes in the mucous membrane characteristic of gastritis, which was morphologically confirmed. The atrophic form of gastritis with signs of unexpressed inflammation was mostly met. After the course of treatment, positive dynamics in the form of a decrease in the inflammatory process in the gastroduodenal mucosa, epithelialization of acute erosions in the antrum of the stomach and a decrease in the severity of duodenogastric reflux was observed.

Ultrasound examination of the abdominal cavity, conducted in dynamics, testified the normalization of the contractile function of the gallbladder and intestines.

After the course of complex treatment there is a tendency to decrease in the level of ionized blood calcium from 1.23 ± 0.05 to $1.16 \pm 0.02 \text{ mmol/l}$ and the daily excretion of calcium in the urine from 5.65 ± 2.62 to $4.76 \pm 2.20 \text{ mmol/day}$, which is associated with improved absorption of calcium in the intestine, input of it to the bone tissue and slowing down of bone resorption. Baseline serum calcidiol ranged from 13 to 34 ng / ml. The average index of vitamin D was $23.7 \pm 5.29 \text{ ng} / \text{ml}$, which corresponds to a slight deficiency of vitamin D in the blood serum.

After the course of treatment, increase in the average level of calcidiol in the blood to $28.01 \pm 5.29 \text{ ng} / \text{ml}$ with a range of fluctuations from 15 to 38 ng / ml was

registered.

At the same time, the minimum concentration of vitamin D was noted in the patient who had not previously consumed fresh fish, and the maximum concentration was noted in the patient who is actively engaged in physical exercise and regularly consumes fresh fish and fish products.

According to x-ray densitometry after 6 months of observation, the increase in BMD in the observed group averaged 3.36% ($0.03 \text{ g} / \text{cm}^2$), the increase in T and Z criteria - by 0.3 SD. The increase in bone mineralization in the axial skeleton was observed in the segments, where the initial BMD corresponded to osteopenia.

Conclusion. The clinical study demonstrated a positive therapeutic effect of the combined use of fish bone flour and mineral water "Abalakhskaya" in elderly patients with gastroenterological pathology and metabolic disorders of vitamin D for the clinical course of diseases, bone mineral density, paraclinical indicators. Developed by us the non-drug method will allow the introducing of personalized medical technologies into practical healthcare.

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Information about authors

EMELYANOVA Elvira Andreevna - candidate of medicine, associate Professor of the Department "Hospital therapy, occupational diseases and clinical pharmacology" of the Medical Institute of NEFU named after M. K. Ammosov, Yakutsk, Sakha Republic (Yakutia), E-mail: elviraemelyanova03@mail.ru;

PALSHINA Aida Mikhailovna - candidate of medicine, associate Professor. Head of Department "Hospital therapy, occupational diseases and clinical pharmacology" of the Medical Institute of NEFU named after M. K. Ammosov Yakutsk, Sakha Republic (Yakutia), E-mail: palshinaaida@rambler.ru;

SAFONOVA Svetlana Lukinichna - candidate of biology. Head SRSL "Medical technologies in gastroenterology" of the Department "Hospital therapy, occupational diseases and clinical pharmacology" of the Medical Institute of NEFU named after M. K. Ammosov Yakutsk, Sakha Republic (Yakutia), E-mail: pnii_unir@mail.ru.

