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THE ROLE AND CLINICAL SIGNIFICANCE OF MICELLAR VITAMIN D IN PATIENTS WITH CHRONIC PANCREATITIS

Aripova Nargiza Nusratovna
Tashkent State Medical University
E-mail: aripovan755@gmail.com

Abstract: This study aimed to evaluate the efficacy of micellar vitamin D (Aquadetrim) in correcting vitamin D deficiency in patients with chronic pancreatitis (CP) complicated by exocrine pancreatic insufficiency. A total of 34 patients were examined. Among them, 20 patients with serum vitamin D levels below 20 ng/mL were assigned to the main group and received micellar vitamin D supplementation for 3 months alongside baseline enzyme therapy. The remaining 14 patients received only enzyme therapy. The results showed that enzyme therapy alone partially increased vitamin D levels, whereas patients receiving micellar vitamin D achieved a significant increase in serum 25(OH)D, approaching normal values. Clinical symptoms, including abdominal pain, muscle cramps, fatigue, hair loss, and brittle nails, improved markedly in the main group. No increase in serum calcium levels was observed during therapy, indicating the safety of the preparation. These findings suggest that in patients with chronic pancreatitis, combining enzyme therapy with micellar vitamin D is an effective approach for correcting vitamin D deficiency.

Keywords: Chronic pancreatitis; exocrine insufficiency; vitamin D deficiency; 25(OH)D; micellar vitamin D; Aquadetrim; enzyme therapy; pancreatin; malabsorption; clinical efficacy.

Relevance of the Topic. Chronic pancreatitis (CP) is currently considered one of the most prevalent and complication-prone gastrointestinal disorders. In CP, the development of exocrine pancreatic insufficiency significantly impairs the absorption of fat-soluble vitamins, particularly vitamin D. Vitamin D deficiency is known to contribute to disturbances in bone mineralization, osteopenia and osteoporosis, reduced immune function, metabolic alterations, and overall deterioration of quality of life.

In recent years, evidence has accumulated that micellar forms of vitamin D exhibit superior bioavailability compared to conventional formulations. Micellar preparations enhance intestinal absorption and increase bioavailability, which is especially important for patients with malabsorption associated with chronic pancreatitis. However, the precise clinical efficacy and advantages of micellar vitamin D in the context of CP remain insufficiently studied, highlighting the importance of further research.

Therefore, investigating the role and clinical significance of micellar vitamin D in patients with chronic pancreatitis is crucial for improving the effectiveness of comprehensive therapy, preventing vitamin D deficiency, and reducing complications, making it highly relevant both practically and scientifically.

Objective: To evaluate the efficacy of micellar vitamin D (Aquadetrim) in correcting vitamin D deficiency in patients with chronic pancreatitis (CP) complicated by exocrine pancreatic insufficiency. Tasks:

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To assess serum vitamin D levels in patients with chronic pancreatitis prior to enzyme therapy.

To investigate the effect of enzyme therapy on vitamin D levels.

To determine the efficacy of micellar vitamin D supplementation in patients with serum vitamin D levels below 20 ng/mL.

To evaluate the therapeutic effect of Aquadetrim (3000 IU) over 3 months based on clinical and laboratory parameters.

To perform a comparative analysis of clinical dynamics between patients receiving micellar vitamin D and those who did not.

Materials and Methods: A total of 34 patients with chronic pancreatitis were examined. Among them, 20 patients with serum vitamin D levels below 20 ng/mL were assigned to the main group, while 14 patients constituted the comparative group.

Methods: All patients received enzyme therapy (pancreatin minimicrospheres, 75,000 IU/day) for 3 months. The main group additionally received micellar vitamin D (Aquadetrim) at a dose of 3000 IU daily for 3 months. Serum vitamin D (25(OH)D), calcium levels, and clinical symptoms including pain, hair loss, brittle nails, muscle cramps, and fatigue—were assessed. Serum calcium was monitored twice a month. Laboratory analyses were performed at baseline (upon hospital admission), after 3 months of enzyme therapy, and after an additional 3 months following micellar vitamin D supplementation.

Results and Analysis. Although enzyme therapy in the examined patients led to a modest increase in serum vitamin D levels, detailed analysis indicated that enzyme therapy alone was insufficient to correct vitamin D deficiency. Some patients had serum vitamin D levels above or within the normal range prior to treatment. However, in patients with confirmed vitamin D deficiency, enzyme therapy did not result in a significant positive change.

Therefore, patients with serum vitamin D levels below 20 ng/mL were assigned to a separate main group and received micellar vitamin D according to the recommendations of O.A. Gromova (2014), which are considered appropriate for patients with impaired intestinal absorption. Out of a total of 34 patients, 20 were included in the main group and received Aquadetrim at a dose of 3000 IU daily for 3 months alongside baseline enzyme therapy after providing informed consent. The remaining 14 patients formed the comparative group and continued to receive pancreatin minimicrospheres at a dose of 75,000 IU per day with meals.

In the main group, patients receiving Aquadetrim for 3 months demonstrated marked improvements in clinical and laboratory parameters. Serum calcium was monitored twice monthly during therapy, and no increases were observed, confirming the safety of the preparation.

In the main group, mean serum 25(OH)D levels at hospital admission were 10.9 ± 0.66 ng/mL. After 3 months of enzyme therapy, levels increased to 13.8 ± 0.07 ng/mL. Following an additional 3 months of micellar Aquadetrim supplementation, vitamin D levels significantly increased to 23.25 ± 0.35 ng/mL. Clinically, the following improvements were observed: abdominal pain resolved in 90% of patients; hair loss decreased in 85%; nail brittleness improved in 60%; calf and lower limb muscle cramps were eliminated in 80%; irritability decreased by 50%; and overall fatigue decreased in 55% of patients.

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In the comparative group, some clinical and laboratory improvements were noted; however, these changes were less pronounced than in the main group. Serum 25(OH)D levels were 10.49 ± 1.0 ng/mL at admission, 13.47 ± 1.04 ng/mL after 3 months of enzyme therapy, and only 15.71 ± 0.9 ng/mL after an additional 3 months of enzyme therapy without micellar vitamin D supplementation.

Conclusion. Overall, the results indicate that the use of micellar vitamin D in combination with enzyme therapy is highly effective in correcting vitamin D deficiency and alleviating clinical symptoms in patients with chronic pancreatitis. The study revealed that vitamin D deficiency, particularly its severe forms, is widespread among patients with chronic pancreatitis and exocrine insufficiency. While enzyme therapy as a baseline treatment demonstrates some positive effects, it is insufficient to fully normalize vitamin D levels. Therefore, supplementation with micellar vitamin D (Aquadetrim) as part of baseline therapy proved to be appropriate and effective.

It is recommended that patients with chronic pancreatitis continue enzyme therapy after hospital discharge, regularly monitor serum vitamin D levels monthly, and administer targeted vitamin D supplementation according to the severity of deficiency.

The study also showed that three months of enzyme therapy after chronic pancreatitis led to a significant reduction in clinical symptoms, decreased hyperamylasemia, and increased serum 25(OH)D levels. These changes contribute to improved overall patient condition, prevention of complications such as osteopenia and osteoporosis, and enhancement of quality of life.

Additionally, three months of enzyme therapy partially corrected gastrointestinal functional insufficiency, improved digestion, and promoted the absorption of nutrients, including macro- and micronutrients. However, enzyme therapy alone could not completely eliminate vitamin D deficiency. Overall, enzyme therapy is an effective method for treating chronic pancreatitis and can improve overall health indicators by up to 2.24 times. Nevertheless, to fully correct vitamin D deficiency, supplementation with micellar vitamin D as part of baseline therapy is necessary and recommended

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