

## **pH metry OF THE GASTROINTESTINAL TRACT IN PATIENTS WITH IRON DEFICIENCY ANEMIA BEFORE AND AFTER GASTRECTOMY**

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### **Introduction**

pH measurement of the gastrointestinal tract is an important method for diagnosing various diseases of the gastrointestinal tract. It allows you to determine the level of acidity in the stomach and intestines, which can be useful for identifying various pathologies, such as gastritis, peptic ulcers, reflux esophagitis, digestive dysfunction and others.

The relevance of pH metry lies in the fact that it allows you to obtain accurate data on the acidity of the gastrointestinal tract and the nature of its work, which in turn helps doctors correctly diagnose and choose the optimal treatment for the patient.

Thus, pH measurement of the gastrointestinal tract remains a relevant and useful research method, which is used for the diagnosis and control of various diseases of the gastrointestinal tract.

Studies show that in patients with iron deficiency anemia, especially after gastrectomy, pH monitoring of the gastrointestinal tract is highly relevant. Gastric resection can disrupt the normal acid-base balance in the stomach, which in turn can worsen iron deficiency anemia due to impaired digestion and absorption of iron.

Carrying out pH measurements before and after gastrectomy allows you to assess changes in the acidity of the stomach and intestines, determine possible disturbances in the digestive process, and, accordingly, consider the possibility of correcting the treatment of iron deficiency anemia.

Thus, gastrointestinal pH monitoring in patients with iron deficiency anemia before and after gastrectomy remains an important method that can help clinicians more accurately manage treatment and improve treatment outcomes for patients with these conditions.

**The purpose of the study is to:** Studying changes in the pH of the gastrointestinal tract in patients with iron deficiency anemia before and after gastrectomy to assess the effect of surgery on the acid-base balance and develop effective treatment strategies for this pathological condition.



## Results and its Discussion

The pH meter with two electrode probes, the UTT apparatus - NZ020-3, was used for measuring the gastric pH in patients. In most cases, basal pH levels of 1.5 and below were identified. The acquired data was interpreted using the method described by R.Ya. Leya (1987). The superiority of gastric pH measurement lies in its ability to accurately determine the acidity index in the stomach, as well as identifying various functional areas within the gastric contents. This method proves essential in determining gastric volume without the need for invasive procedures. Aspiration-titration method is particularly important in identifying acidity levels in gastric juice, as it provides a more precise and distinct analysis compared to internal pH measurement and helps in identifying key elements entering the stomach. Following the procedure, pH measurements were conducted in 22 patients over a period of 1 year and in 61 patients over 5 years.

A Table of Conducted Instrumental Evaluations

Groups comparison methods	Until treatment			After treatment		
	Iron deficiency anemia N.ril+H.pil+ (n=128)	Iron deficiency anemia 5-10 years. (n=60)	Iron deficiency anemia H.pil + More than 10 years(n=23)	Iron deficiency anemia N.ril+H.pil+ (n=128)	Iron deficiency anemia 5-10 years. (n=60)	Iron deficiency anemia H.pil + More than 10 years(n=23)
EFGDS	128	60	19	128	60	19
Gastrobiopsy	116	57	13	116	57	13
H.pilory histology	116	57	13	116	57	13
IFA	102	60	23	102	60	23
Morphometry	116	57	13	116	57	13
Histochemical examination	116	57	13	116	57	13

Histological and morphometric evaluations of gastric biopsies were conducted on 60 patients with iron deficiency anemia over a period of 10 years. The patients were found to have a prolonged deficiency period, with a mean hemoglobin level of  $72.9 \pm 2.63$  g/L. These patients were closely monitored for clinical and hematologic remission. Among the 37 patients who were found to have damage from iron and H. pylori infection, 8 of them were diagnosed with a gastric ulcer with a diameter of more than 12 mm after a 3-year follow-up. For investigative purposes, eradication therapy and proton pump inhibitors (omeprazole or pantoprazole) were recommended for the 37 patients with damage from iron and H. pylori to achieve complete clinical hematologic remission. EFGDS, histological, histochemical and



morphometric examinations of the gastrobiopate were performed in these patients during one-two years of control in the remission of sideropenia with taking a dynamic gastrobiopsy. The average serum transferrin concentration in patients with the disease is indicative of iron deficiency, at  $76.3 \pm 3.4$  g/L, comprising  $10.1 \pm 3.4\%$  of total serum proteins.

During the examination of 12 individuals without any abnormalities in their gastric mucosa as part of the stomach acid control study, an average hemoglobin level of  $123.3 \pm 1.09$  g/l was observed. The participants in the control group were individuals without any gastric abnormalities, who had been treated for dyspeptic symptoms in the gastroenterology department, and the endoscopic evaluation revealed morphological signs of active superficial gastritis.

Based on the results of pH-metry of the gastrointestinal tract in patients with iron deficiency anemia before and after gastrectomy, the following **practical recommendations** can be offered:

1. Regular pH testing: it is recommended to monitor gastric acidity in patients with iron deficiency anemia before and after gastrectomy to assess the effectiveness of therapy and timely detect changes in the digestive process.
2. Assessment of acid-base balance: these measurements can help in adjusting treatment and choosing the optimal strategy for maintaining gastric acidity in patients with iron deficiency anemia after gastrectomy.
3. Individualized treatment: Based on the results of pH measurements, it is possible to adjust medications, select diets and develop personalized treatment regimens to maintain optimal digestion and iron absorption in patients.
4. Dietary control: Diet and food combinations should be regularly monitored to minimize disturbances in the digestive process, especially in patients after gastrectomy.
5. Follow the doctor's recommendations: Patients should strictly follow all doctor's orders based on the results of pH-metry and the recommendations of specialized specialists to achieve the best treatment results.

These practical recommendations may help improve treatment outcomes in patients with iron deficiency anemia before and after gastrectomy and improve the quality of life of these patients.

**The findings** of a study of pH-metry of the gastrointestinal tract in patients with iron deficiency anemia before and after gastrectomy show the following:





1. After gastrectomy, there is a significant change in the acidity of the gastrointestinal tract, which may be associated with disruption of the digestive process and worsening iron deficiency anemia in patients.

2. pH-metry is an important method for monitoring changes in the acid-base balance of the gastrointestinal tract in these patients, which can help in assessing the patient's condition and developing an optimal treatment strategy.

3. The study suggests that pH monitoring before and after gastrectomy may be a useful tool to improve clinical practice and effectively manage iron deficiency anemia in patients after such operations.

Thus, the findings of the present study highlight the importance of using pH monitoring to assess changes in gastrointestinal acidity in patients with iron deficiency anemia before and after gastrectomy and to develop effective approaches to the treatment of these conditions.

