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Research Protocol

Ileocecal Angle Insufficiency: Focus on Impaired Motor Function of the Small and Large Intestine

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Abstract

Aim of the Study: The aim of the study was to identify the violation of the motor function of the small and large intestine in the case of ileocecal angle insufficiency.

Materials and Methods: Patients suffering from ileocecal valve insufficiency were under observation, including two women aged 52.5 ± 7.9 years and two men aged 57.5 ± 5.8 years. Patients noted pain along the ascending part of the colon. Signs of disorders of the function of connective tissue and the intramural nervous system were revealed. Motor function of the small and large intestine was recorded by electromyographic (EMG) tests. The amplitude-frequency characteristics of slow waves and spikes, the power of phase and tonic contractions, and propulsive activity were evaluated. The comparison group consisted of 6 patients suffering from chronic gastritis. Statistical analysis was performed using the nonparametric Mann-Whitney method.

Results: The phenomena of dysbiosis in the jejunum were leveled in comparison with the previously studied duodenum. In the ileum, there is a progressive increase in propulsive activity due to reflux of the colonic contents. Hypomotor dyskinesia developed in the right parts of the colon due to the development of intestinal dysbiosis. With the insufficiency of the ileocecal angle, the development of dysbiosis of the proximal colon is generally observed.

Keywords: *Insufficiency of the Ileocecal Angle; Dysbiosis; Electromyography*

Introduction

Insufficiency of the ileocecal valve is possible due to a lack of its regulation (functional insufficiency of the bauginian valve), as well as inflammatory and tumor processes [1]. Violation of the valve function causes the development of the syndrome of excessive bacterial contamination of the small intestine (dysbacteriosis of the small intestine) since it promotes the penetration of the bacterial flora of the colon into it [2].

Barium mixture during irrigoscopy easily fills the distal loops of the ileum, while colonoscopy reveals a gaping gap in the ileocecal valve. In connection with the clinical observations of motor disorders of the small and large intestine with ileocecal angle insufficiency, it was important to investigate the motor function of the small and large intestine.

Aim of the Study

The aim of the study was to identify the violation of the motor function of the small and large intestine in the case of ileocecal angle insufficiency.

Materials and Methods

Four patients suffering from ileocecal valve insufficiency were under observation, including two women aged 52.5 ± 7.9 years and two men aged 57.5 ± 5.8 years. Patients noted pain along the ascending part of the colon. Signs of disorders of the function of connective tissue and the intramural nervous system were revealed - gastroptosis, hypotension of the ascending colon with the development of constipation. Motor function of the small and large intestine was recorded by electromyographic (EMG) tests. The amplitude-frequency characteristics of slow waves and spikes, the power of phase and tonic contractions, and propulsive activity were evaluated using the Conan-M hardware and software complex with a bandwidth of 1-10mV. The comparison group consisted of 6 patients suffering from chronic gastritis. Statistical analysis was performed using the nonparametric Mann-Whitney method.

Results

In the jejunum, the frequency of slow waves is 19.5 ± 0.8/min (a decrease of 2.5%, $p < 0.05$), the amplitude is 0.09 ± 0.003 mV (a decrease of 10%, $P < 0.05$), the power of tonic contractions is 1.755 ± 0.14 (a decrease of 12.3%, $p < 0.05$). The frequency of spikes was 3.4 ± 0.04 mV (an increase of 240%, $p < 0.001$), the amplitude-0.02 ± 0.004 mV (a decrease of 79.9%, $p < 0.05$), the power of phase contractions - 0.068 ± 0.003 (a decrease of 32%, $p < 0.05$), propulsive activity - 25.7 ± 2.3 (an increase of 28.5%, $p < 0.05$). The phenomena of dysbiosis in the jejunum were leveled in comparison with the previously studied duodenum.

In the ileum, the frequency of slow waves was 25.0 ± 1.3/min (an increase of 36%, $p < 0.05$), the amplitude was 0.16 ± 0.03 mV (an increase of 60%, $p < 0.05$), the power of tonic contractions was 4.0 ± 0.2 (an increase of 150%, $p < 0.002$). The frequency of spikes was 4.0 ± 0.5 (an increase of 300%, $p < 0.001$), the amplitude was 0.02 ± 0.001 mV (an increase of 79.8%, $p < 0.05$), the power of phase contractions was 0.08 ± 0.002 (a decrease of 20%, $p < 0.05$), the propulsive activity was 50.0 ± 1.5 (an increase of 212.5%, $p < 0.01$). That is, in the ileum, there is a progressive increase in propulsive activity due to reflux of the colonic contents.

Electromyographically, in the right parts of the colon, the frequency of slow waves was 10.4 ± 0.4/min (a decrease of 5.5%, $p < 0.05$), the amplitude was 0.07 ± 0.003 mV (a decrease of 30%, $p < 0.05$), the power of tonic contractions was 0.728 ± 0.0631 (a decrease of 33.8%, $p < 0.05$). The frequency of spikes was 3.8 ± 0.3 mm (an increase of 280%, $p < 0.001$) amplitude of 0.03 ± 0.002 mV (an increase of 70%, $p < 0.05$), power phase cuts - 0,114 ± 0,010 (14% increase, $p < 0.05$), the propulsive activity of 6.38 ± 0,54 (a decrease of 42%, $p < 0.05$). That is, hypomotor dyskinesia developed in the right parts of the colon due to the development of intestinal dysbiosis. Thus. with the insufficiency of the ileocecal angle, the development of dysbiosis of the proximal colon is generally observed.

Conclusion

1. Hypomotor dyskinesia of the proximal part of the colon was observed with ileocecal angle insufficiency, which may indicate the development of intestinal dysbiosis.

2. Pronounced hypermotor dyskinesia of the ileum indicates retrograde motility of the right parts of the colon, due to insufficiency of the ileocecal angle.

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