

X-ray changes in the stomach - intestinal motility in hypokinesia

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Annotation: In this article, gastrointestinal motility under condition of hypokinesia was studied during experiments. X-ray contrast examinations with barium sulfate showed that passage in the digestive tract slowed down due to changes in gastrointestinal evacuation activity under hypokinesia.

Keywords: hypokinesia, intestinal motility, X-ray contrast substance, stomach, intestine.

Relevance of the topic. The modern concept of "hypokinesia" is a restriction of movement in the large joints of the body, which is quite different from hypodynamics. Today, hypokinesia has entered people's lives unnoticed, and has begun to endanger their health. Typically, hypokinesia is thought to be caused by a variety of natural and man-made disasters: strong earthquakes, floods, or unexpected disasters at large manufacturing plants. As a result of such natural and man-made disasters, the isolation of people in small areas for a certain period of time - dehydration, accompanied by a feeling of hunger, leads to the restriction or cessation of active physical activity in them.

At the same time, in the computer age, it has become common for mentally active people to be in a state of constant hypokinesia, to stop moving in large joints and to act only on the movement of the palms or fingers. Long-term hypokinesia causes various changes in the body and it is studied in modern medicine today as "Hypokinetic syndrome" or "Hypokinetic disease" (1, 2, 3).

The effects of hypokinesia as a stress factor, disruption of digestive processes, impaired absorption of nutrients, the origin of various stages of dysbacteriosis in the stomach and intestines have been studied by local and foreign scientists (2, 4, 5, 6).

Objective: To study the motility of the gastrointestinal tract in hypokinesia under medical radiological methods.

Object and method of research:

The experiments were performed on white rats weighing 150-160 grams. Experimental animals were divided into two groups: the first - white rats in the control group in wide, large cages under normal vivarian conditions; the second - rats in hypokinesia were fed in special small devices, with limited movement. A special hypokinesia device - peneli was 150 - 50 - 50 millimeters, depending on the weight of laboratory animals. The experiments were performed with unlimited feed intake and drinking water for laboratory animals. On days 7 and 30 of the experiments, 2.0 milliliters of barium sulphate was administered in a 1:10 ratio to the stomach of rats under control and hypokinesia using special probes. X-rays were then taken 10 to 30 minutes, 1 to 2 to 3 to 4 to 6, and 24 hours later. The obtained radiographs were compared comparatively by time.

Research results and analysis:

X-ray examinations of rats in the first control group showed the following results: 10 minutes after administration of barium sulphate, the contrast medium was filled and partially passed into the duodenum, and 30 minutes later, the X-ray contrast medium filled the duodenum and opened the small intestine. passed to the upper proximal part. 1 hour after 2 hours in the small intestine 2/3, and after 2 hours in all parts rentrencotrast substance appeared, a small amount remained in the stomach. In the following periods, the passage continued to shift, and after 6 hours only small traces remained in the stomach and small intestine, the main part of which was found in the colon, especially the sigmoid colon. On radiographs after 24 hours, however, we found that the contrast agent was completely absent in the stomach and small intestine of barium sulfate, filling the sigmoid cavity in the form of small granules in the transverse and descending parts of the colon.

Studies have shown that in laboratory animals in the control group, the contrast agent barium sulfate passes from the stomach into the duodenum and upper part of the small intestine for 10-30 minutes, filling the small intestine in the next period, and in 2 hours into the colon, filling the cavity in 6 hours. It was found to be excreted from the sigmoid colon through the rectum within 24 hours.

Significant changes occurred when experimental animals under hypokinesia underwent similar gastrointestinal-intestinal passages. Investigations at 7 days of hypokinesia showed that the contrast agent partially passed from the barium-sulfate stomach to the duodenum within 10–30 min, and after 60 min, the X-ray contrast agent filled the duodenal cavity and began to pass into the upper proximal part of the small intestine. After 2–3 hours, the small intestine appeared in 2/3, and only after 6 hours in the remaining part. Even at this time, a small amount remained in the stomach. X-rays performed 24 hours later revealed that the contrast agent was partially present in the stomach and small intestine, in the transverse and descending parts of the colon, and in the sigmoid colon.

At 30 days of hypokinesia, radiographs showed that the contrast agent had partially passed from the stomach to the duodenum in 10 to 30 to 60 minutes, filling the duodenal cavity in 2–3 hours and beginning to pass into the upper proximal part of the small intestine. After 4 to 6 hours, it appeared in 2/3 of the small intestine, and only after 8 hours in the remaining part. In the following periods, the passage-shift continued gradually, and on radiographs after 24 hours, the contrast agent was barium-sulfate in small amounts in the stomach, small intestine, and colon, filling the sigmoid colon.

X-ray contrast studies with barium sulfate showed a slowing of the passage-shift process in the digestive tract due to changes in gastric evacuation activity, intestinal motility under hypokinesia.

Conclusions:

Hypokinesia affects not only the general condition of the body, but also all organs and systems. The data obtained from the study, that is, the slowing of the evacuation-motility of the gastrointestinal tract, on the basis of which there is a clear violation of digestion and absorption.

Hypokinesia is not only the result of various natural and man-made disasters, but today, the computer age has made it a habit for mentally active people to be in a state of constant hypokinesia, stopping movement in large joints and acting only on the movement of the hand or fingers.

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