GASTRIC CONDITION IN CRITICALLY ILL PATIENTS ON ARTIFICIAL VENTILATION

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Summary

The condition of the gastrointestinal tract (GIT) in critically ill patients undergoing mechanical ventilation (MV) is associated with a high risk of developing severe complications. These complications include erosive and ulcerative lesions, gastrointestinal bleeding, acute pancreatitis, stress-induced gastropathy, and ischemic damage to the gastrointestinal mucosa. The main factors contributing to the development of these disorders include stress reactions of the body, ischemic changes, infections, and the effects of pharmacological agents used in the intensive care of the underlying disease. Long-term mechanical ventilation further worsens the condition of the gastrointestinal tissues, reducing their perfusion and disrupting the protective functions of the mucosa. An important aspect of pathogenesis is impaired microcirculation and hypoxic damage, which contributes to increased permeability of the mucosa and an increased likelihood of systemic inflammatory reactions. This article discusses the features of the GIT condition in this category of patients, as well as analyzes risk factors and suggests possible strategies for preventing these complications.

Keywords: erosions, scars, ulcers, morphological examination, biopsy.

Introduction

Morphological changes in the gastric mucosa in patients in critical condition and requiring artificial ventilation play a key role in the pathogenesis of complications from the gastrointestinal tract [1] . These changes are caused by the complex influence of many factors, including the systemic inflammatory response, ischemic processes associated with deterioration of tissue blood supply, stress reactions of the body, as well as side effects of drug therapy widely used in intensive care. Long-term use of artificial ventilation negatively affects the microcirculation of the gastric mucosa, reducing its barrier functions and creating conditions for the development of erosions, ulcerative lesions and other pathological changes [2] . Understanding these morphological changes is of great clinical importance, since it allows for improved diagnosis and prevention of complications, which, in turn, helps to optimize treatment strategies and increase the survival of patients in critical condition [3] .

The study of gastroduodenal damage in patients on mechanical ventilation is the subject of careful morphological, clinical and endoscopic analysis. Stress effects play a significant role in the development of mucosal defects, activating tissue damage mechanisms [4] . In addition, the effects of drugs such as non-steroidal anti-inflammatory drugs (NSAIDs) and glucocorticoids aggravate destructive processes in the mucosa, which is confirmed by numerous clinical studies. Thus [5] , the study of morphological changes in the gastric mucosa in patients on mechanical ventilation is an important element for understanding the mechanisms of damage and developing effective methods for the prevention and treatment of these complications.

Objective of the study: To improve treatment results by studying the clinical and morphological features of the stomach of patients in serious condition under artificial respiration.

Materials and methods. The work is based on the analysis of studies conducted in 50 patients who underwent inpatient treatment in the general intensive care unit of the Republican Scientific Center for Emergency Medical Care of the Navoi Region in the period from 2022 to 2024 in the general intensive care unit.
to examine these patients. According to the diagnostic algorithm, clinical and laboratory examination methods, ultrasound and endoscopic examination of the gastrointestinal tract were performed.

Results of the discussion

The age structure of hospitalized patients was dominated by elderly patients (60-74 years) – 52% of the total number, which emphasizes the significant influence of the age factor on the severity of the condition. Most often, patients with acute cerebrovascular accidents (ACVA) were admitted to the intensive care unit, both primary (16 cases) and recurrent (7 cases), which is 75% of the total number of patients with severe diagnoses. Among those hospitalized with multiple injuries (6 patients), men also dominated, which is consistent with the observation of a higher risk of severe injuries among the male population.
Analysis of respiratory support shows that the majority of patients required adequate mechanical ventilation (MV) – 34 out of 50, which highlights the severity of their condition. Of these patients, 26 were intubated via an endotracheal tube, and 8 patients had a tracheostomy inserted , which is an indicator of extremely complex respiratory distress. Reasons for switching to MV included upper airway obstruction, severe respiratory depression and apnea, which made it impossible for the patients to independently maintain respiratory function.

Attention was paid to the condition of the gastrointestinal tract in critically ill patients. A number of patients with multiple injuries and acute surgical pathologies, such as acute pancreatitis complicated by diffuse peritonitis, peptic ulcer disease and cholelithiasis, developed serious complications requiring immediate surgical intervention and intensive care. Staying in a state of adequate ventilation of the lungs, especially with prolonged mechanical ventilation, was often accompanied by gastrointestinal disorders associated with both the underlying disease and complications such as gastrointestinal bleeding and stress ulcers. This factor aggravated the severity of the patients' condition, increased the duration of their stay in the department and required a multidisciplinary approach to treatment.

Morphological state of the gastric mucosa in critically ill patients revealed a number of significant pathological changes associated with the underlying pathology and the need for artificial lung ventilation (ALV). Histological examination of the gastric mucosa was performed in 34 patients who were on adequate ALV, the results of which indicate the presence of structural changes. Morphological analysis showed that most patients had inflammatory changes in the gastric mucosa, which may indicate the development of gastritis or other inflammatory processes aggravated by the critical condition.

Histological studies demonstrated degenerative changes in epithelial cells, which could be associated with hypoxia and deterioration of the general condition against the background of the underlying pathology. Some patients had mucosal erosions, indicating damage to the mucosal barrier, probably caused by both the underlying disease and complications associated with prolonged mechanical ventilation. These changes in the structure of the stomach can contribute to the development of ulcerative processes, especially in those patients who had concomitant diseases of the gastrointestinal tract.

The examination of histological samples also revealed the presence of vascular changes in the gastric mucosa, which may be a consequence of the systemic inflammatory response and microcirculation disorders often observed in critically ill patients. These vascular changes may aggravate the disruption of the gastric barrier function, increasing the risk of bleeding and other complications. Thus, the morphological state of the stomach in patients on mechanical ventilation is characterized by significant changes that require close monitoring and appropriate therapy.

Conclusion

The presented data demonstrate a correlation between various diseases and changes in the gastric mucosa revealed by EGD, histological features and morphological changes. In patients with polytrauma, CCT, cerebral edema and aspiration syndrome, erosive and superficial gastritis is observed, accompanied by vascular congestion and mucosal defects, which leads to submucosal vascular inflammatory hyperemia. In ischemic stroke, esophagitis and erosive gastritis are detected, characterized by glandular hyperplasia and lymphofollicular infiltration

with leukocyte infiltration of the submucosal layer. Severe craniocerebral trauma and epidural hematomas also cause erosive gastritis and leukocyte infiltration. In segmental thrombosis of the ascending small intestine and Mallory-Weiss syndrome, inflammatory hyperemia of the vessels and leukocyte infiltration are recorded, and in patients with colon tumors , subatrophic gastritis, glandular hyperplasia, and inflammation in the mucous and submucous layers are observed. These data emphasize the importance of a comprehensive approach to the diagnosis and treatment of diseases, including endoscopic, histological, and morphological examination.

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