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Assessment of Current Therapy and Advanced Management Methods for Acetylsalicylic Acid–Associated Gastropathy in Individuals with Cardiovascular Disease

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Annotation: The aim of this review is to summarize and critically analyze contemporary evidence (2019–2025) regarding the incidence, mechanisms of development, clinical features, and preventive measures of gastropathy in cardiology patients receiving acetylsalicylic acid (ASA). The review includes an evaluation of meta-analyses, systematic reviews, major randomized controlled trials, and data from clinical registries. Particular attention is given to approaches to gastroprotection, the impact of Helicobacter pylori infection, the significance of different ASA formulations, and aspects of combined antithrombotic therapy. The article provides practical conclusions and recommendations relevant to clinical practice.

Keywords: acetylsalicylic acid; gastropathy; cardiovascular patients; gastric mucosal damage; proton pump inhibitors; Helicobacter pylori; antithrombotic therapy; prevention.

Introduction.

Acetylsalicylic acid (ASK) remains the fundamental means of antithrombotic therapy in cardiology. It is prescribed for coronary heart disease, after a previous myocardial infarction, for stroke prevention, and in a number of other clinical situations. Despite its advantages in reducing thrombotic events, ASC is associated with the risk of gastrointestinal tract (GIT) complications,

including gastropathies of varying severity. In clinical practice, this creates a dilemma: how to combine the cardiological benefits of ASC and minimize the risk of gastric toxicity.

In recent years, numerous studies have emerged aimed at clarifying the true frequency of gastropathies when taking low-dose ASCs, as well as at assessing the effectiveness of various gastroprotection strategies. Special attention is paid to populations of cardiological patients where combined therapy (for example, double antiplatelet therapy or the addition of anticoagulants) significantly increases the risk of bleeding from the upper gastrointestinal tract [1].

Methods.

To prepare the review, systematic literature searches were conducted in PubMed, PMC, Scopus, and Google Scholar databases for the period 2019-2025. Keywords: "aspirin," "aspirin gastropathy," "upper gastrointestinal bleeding," "cardiovascular patients," "proton pump inhibitors," "Helicobacter pylori." Systematic reviews, meta-analyses, R&D, large cohort studies, and guidelines from professional societies were selected. The selection process took into account the relevance to the cardiological population and the quality of the methodology.

Pathogenesis of gastropathy when taking ASC

Gastrotoxicity of ASC is caused by several mechanisms. The main systemic mechanism is the inhibition of COG-1 and subsequent reduction of prostaglandin synthesis, which ensure the protective functions of the mucous membrane (production of mucus and bicarbonate, regulation of microcirculation). This reduces the epithelium's resistance to aggressive factors and slows down repair after microtrauma [2].

Locally, the tablets can cause direct irritation of the epithelium, especially when taken in unprotected forms. Enterosoluble forms partially eliminate local gastric irritation but do not prevent the systemic effects of ASC, and their impact on clinical outcomes is ambiguous. [3].

Modern molecular studies indicate additional damage pathways: changes in microbiota composition, disruption of intestinal barrier function, activation of pro-inflammatory signaling pathways, and modulation of factors such as FXR and endothelin-1 (ET-1), which can contribute to enteropathy development during long-term ASC [4]

Epidemiology and clinical manifestations

The frequency of gastropathy and clinically significant bleeding in patients receiving low doses of ASC (75-100 mg/day) varies depending on the research methodology and the presence of risk factors. Randomized studies and meta-analyses show a relative risk of upper gastrointestinal bleeding in the range of 1.3-2.0 compared to placebo, while the absolute risk depends on the initial population [5].

Clinical manifestations include dyspepsia, epigastric pain, endoscopic erosions, ulcers, and bleeding. Often, lesions can be asymptomatic and are detected only with endoscopy or laboratory signs of chronic blood loss (anemia).

In cardiological patients, the severity of the consequences increases due to polypragmasia: the combination of ASC with clopidogrel or anticoagulants significantly increases the risk of severe bleeding and hospitalization.

Overview of key research in 2019-2025.

During 2019-2025, several meta-analyses and RCTs were published aimed at assessing the risk of gastric toxicity in ASC and the effectiveness of gastroprotection. Meta-analyses confirm the significant benefits of PPI in reducing the risk of clinically significant bleeding in patients receiving antithrombotic therapy, especially with risk factors. [6,7,8].

Randomized studies, including cardiological populations undergoing dual antithrombotic

therapy, demonstrate that the addition of PPIs reduces the frequency of upper gastrointestinal events and related hospitalizations. In parallel, safety analyses indicate the acceptable profile of the PPI in the medium term.

Separate studies have assessed the role of mucoprotectors (rebamipide, mizoprostola) as supplements or alternatives to PPI; data show positive effects regarding endoscopic injuries, but clinical outcomes (bleeding) require further assessment [9].

Table 1. Comparison of ASC output forms

ASC form	Benefits	Shortcomings
Unprotected (ordinary) tablet	Wide availability, low cost	Local irritation of stomach
Enterosoluble form	Reduces local stomach irritation	Does not eliminate systemic COG-inhibition; ambiguous effect on clinical outcomes
Indirect/Prolonged forms	Acceptance comfort	Limited efficacy and safety data in cardiological populations

Gastropathy prevention strategies. Prevention strategy includes several elements: risk assessment, factor modification, ASC form and dosage selection, gastroprotection prescription, and monitoring. Risk assessment tools (factor clusters) allow for the identification of high-risk patients indicated for primary gastroprotection.

IPP is the main instrument of gastroprotection. Systematic reviews and meta-analyses have shown a decrease in the risk of clinically significant ulcers and bleeding when PPI is combined with antithrombotic therapy.[10].

Eradication of H. pylori in patients with a positive test is indicated before or simultaneously with the start of long-term ASC-therapy, which reduces the risk of ulcers and associated complications11.

Additionally, NSAIDs should be minimized, alcohol and smoking should be avoided, concomitant diseases (liver/kidney failure) should be controlled, and combined anti-thrombotic regimens should be minimized whenever possible.

Table 2. Interventions and level of evidence

Intervention	Example effect	Level of evidence
PPI + ASC	Reduction of the risk of bleeding by 50-70%	A (meta-analyses of RSI)
Eradication of H. pylori	Reduced risk of ulcerative complications	A
Rebamipide	Reduction of endoscopic lesions	B
Avoid NSAIDs	A sharp decrease in the risk of gastric toxicity	C (observation data)

Patient monitoring and clinical algorithm. It is recommended to assess gastrointestinal risk before prescribing ASC: history of ulcer disease, H. pylori test, concomitant therapy. In high-risk patients, PPIs are prescribed, and regular monitoring of hemoglobin and gastrointestinal symptoms is planned. If symptoms appear - early referral for endoscopy.

Management algorithm: risk assessment → testing and eradication of H. pylori with a positive result → prescription of ASC taking into account gastroprotection (HPP with high risk) →

monitoring and revision of therapy with changes in the condition.

Restrictions and directions for further research. The available data are limited by the heterogeneity of studies, variability of outcomes, and insufficient observation duration in a number of RCTs. Large randomized studies aimed at cardiological populations with long-term follow-up monitoring are required to determine optimal gastroprotection strategies and assess the long-term safety of PPI.

Further research on microbiota, molecular markers of mucosal damage, and comparative studies of mucoprotectors will help develop personalized approaches.

Clinical recommendations:

1. Before starting long-term ASC therapy, assess the risk of gastropathy and test for H. pylori (if possible).

2. Patients with risk factors (age >65, previous peptic ulcer disease, combined therapy) were recommended to prescribe PPI along with ASC.

3. If possible, avoid prescribing NSAIDs simultaneously; if necessary, ensure gastroprotection.

4. For patients with a positive H. pylori test, eradication should be performed before or simultaneously with the start of ASC therapy.

5. Ensure interdisciplinary collaboration between the cardiologist and gastroenterologist in managing high-risk patients.

Conclusions.

Analysis of the 2019-2025 literature shows that gastropathy during ASC administration remains a clinically significant problem, especially in cardiological patients with risk factors. Gastroprotection (GPP), H. pylori eradication, and an individualized approach allow for a reduction in the frequency of complications. It is necessary to further conduct long-term RCTs and develop local recommendations, taking into account the epidemiology and healthcare resources of Uzbekistan.

Note: the text uses numerical references to sources, the list of references is given in alphabetical order.

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