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MODERN APPROACHES TO THE DIAGNOSIS AND TREATMENT OF GASTRITIS

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Annotation: Gastritis remains one of the most prevalent gastrointestinal conditions worldwide, with Helicobacter pylori as its principal etiological agent. This review synthesizes contemporary diagnostic strategies - including endoscopic, histological, and serological methods - alongside evidence-based treatment protocols, emphasizing vonoprazan-based regimens, optimized eradication therapy, and surveillance of premalignant mucosal changes.

Keywords: gastritis, helicobacteriosis, endoscopy, mucosa, atrophy, metaplasia, dysplasia, eradication, vonoprazan, gastropathy, biopsy, chromoendoscopy, proton-pump-inhibitor, carcinogenesis, sydney-protocol

Gastritis is defined as histologically confirmed inflammation of the gastric mucosa and represents a spectrum of conditions ranging from self-limiting acute forms to chronic progressive disease capable of evolving into intestinal metaplasia, dysplasia, and ultimately gastric adenocarcinoma. The global burden is substantial: Helicobacter pylori infects approximately 44% of the world’s population and is classified by the World Health Organization as a Group I carcinogen, conferring a two- to six-fold increased risk of developing gastric malignancy in infected individuals compared to uninfected counterparts. In Uzbekistan and across Central Asia, where dietary and sanitary conditions favour transmission, the clinical significance of timely and accurate diagnosis cannot be overstated. Recent revisions to international consensus guidelines - including the Kyoto Global Consensus, the RE.GA.IN. consensus of 2024, and the American College of Gastroenterology (ACG) guideline of 2024 - have substantially updated both diagnostic algorithms and treatment protocols, making a critical synthesis of current evidence both timely and necessary.

Literature review

The diagnostic and therapeutic landscape of gastritis has evolved considerably over the past decade. Ivashkin et al. (2021) issued updated clinical guidelines of the Russian Gastroenterological Association (RGA), establishing esophagogastroduodenoscopy with targeted biopsy as the diagnostic gold standard in Russian-speaking clinical practice. Drapkina

et al. (2023) proposed a structured algorithm for managing chronic atrophic gastritis and intestinal metaplasia within Russia's national screening programme. At the international level, the Chinese Society of Gastroenterology (2022) published 53 evidence-based recommendations covering nine major clinical problems in chronic gastritis management. The ACG's 2024 clinical practice guideline introduced vonoprazan-containing regimens as a superior alternative to classical PPI-clarithromycin triple therapy. The ESGE/EHMSG/ESP MAPS III guidelines (2023-2025) consolidated recommendations on endoscopic surveillance of premalignant gastric conditions, reinforcing the role of high-quality mucosal imaging and H. pylori eradication in cancer prevention.

Methodology

This clinical review was conducted at a tertiary-care gastroenterology centre over a 24-month observation period (January 2022 - December 2023). A total of 214 patients were enrolled consecutively following referral for upper gastrointestinal complaints including epigastric pain, postprandial fullness, nausea, and unexplained iron-deficiency anaemia. Inclusion criteria were: age 18-75 years, endoscopically visible mucosal changes consistent with gastritis, and histological confirmation by biopsy. Patients with prior gastric surgery, confirmed gastric malignancy, or ongoing immunosuppressive therapy were excluded, resulting in a final analytical cohort of 198 patients (116 female, 82 male; mean age 47.3 ± 12.6 years).

All patients underwent high-resolution esophagogastroduodenoscopy (HD-EGDS) performed by two certified endoscopists using Olympus EVIS EXERA III systems. In 87 of 198 cases (43.9%), narrow-band imaging (NBI) with optical magnification was applied to characterise mucosal pit patterns and vascular architecture. Biopsy specimens were obtained according to the updated Sydney Protocol: two samples from the greater curvature of the antrum, two from the greater curvature of the corpus, and one from the incisura angularis - totalling five specimens per patient. All biopsies were processed with haematoxylin-eosin and Giemsa staining, and assessed using the OLGA (Operative Link for Gastritis Assessment) and OLGIM (Operative Link on Gastric Intestinal Metaplasia Assessment) staging systems.

Detection was performed using a stepwise approach. The non-invasive urea breath test (UBT; sensitivity 95%, specificity 96%) served as the primary screening tool in 143 patients. Faecal antigen testing (ELISA format; sensitivity 94%, specificity 97%) was applied in 31 patients in whom UBT was contraindicated or technically unfeasible. Histological detection of the organism on Giemsa-stained biopsy sections was performed in all endoscoped patients in parallel. In 24 patients with prior treatment failure, molecular susceptibility testing - specifically

polymerase chain reaction (PCR)-based detection of clarithromycin resistance mutations in the 23S rRNA gene - was performed on biopsy specimens to guide salvage therapy selection.

Serological assessment. Serum pepsinogen I (PgI) and pepsinogen II (PgII) levels were measured in 162 patients using an enzyme-linked immunosorbent assay. A PgI/PgII ratio below 3.0 in combination with PgI < 70 ng/mL was adopted as the threshold for serological prediction of corpus atrophy, consistent with the criteria validated in the Gastropanel® methodology.

Continuous variables were expressed as mean ± standard deviation (SD) or median with interquartile range (IQR) depending on distribution normality verified by Shapiro-Wilk test. Categorical data were compared using the chi-square test or Fisher's exact test. Diagnostic accuracy metrics (sensitivity, specificity, positive predictive value, negative predictive value) were calculated for each modality. Statistical significance was defined as $p < 0.05$. All analyses were performed using SPSS Statistics version 26.0.

Results

Patient distribution and H. pylori prevalence. Of the 198 patients analysed, H. pylori infection was confirmed in 131 (66.2%) by at least one diagnostic method. When comparing individual detection modalities, UBT demonstrated sensitivity of 94.7% and specificity of 96.4% in this cohort, consistent with published reference ranges. Histological detection alone yielded sensitivity of 88.3%, identifying 116 of 131 confirmed cases. The concordance between UBT and histology was 91.4% ($\kappa = 0.82$, $p < 0.001$), indicating substantial inter-method agreement. Endoscopic and histological findings. Chronic non-atrophic gastritis (CNAG) was the most frequently encountered form, present in 94 patients (47.5%). Chronic atrophic gastritis (CAG) was identified in 67 patients (33.8%), of whom 41 (20.7% of total cohort) exhibited concurrent intestinal metaplasia on histological examination. Dysplasia was detected in 9 patients (4.5%): low-grade dysplasia in 7 cases and high-grade dysplasia in 2 cases. Using the OLGA staging system, 38 patients (19.2%) were classified as OLGA stage III or IV, representing the high-risk group for gastric cancer development. The application of NBI chromoendoscopy in 87 patients improved the detection rate of intestinal metaplasia by 23.7% relative to standard white-light endoscopy alone ($p = 0.017$), with sensitivity increasing from 71.4% to 88.6%. Serological findings. Among the 162 patients who underwent serum pepsinogen assessment, 44 (27.2%) had a PgI/PgII ratio below 3.0, of whom 39 (88.6%) were subsequently confirmed to have histological corpus atrophy. The positive predictive value of the serological panel for corpus atrophy was 88.6% (95% CI: 76.2-95.7%), and the negative predictive value was 93.1% (95% CI: 87.8-96.5%). These figures support the use of serum

pepsinogen testing as a non-invasive triage tool prior to endoscopy. Treatment outcomes. Among 131 H. pylori-positive patients, 112 received first-line treatment. Standard bismuth quadruple therapy (BQT: proton pump inhibitor + bismuth subcitrate 120 mg four times daily + tetracycline 500 mg four times daily + metronidazole 500 mg three times daily, for 14 days) was administered to 68 patients, achieving eradication in 61 (89.7%) by intention-to-treat (ITT) analysis. Vonoprazan-amoxicillin-clarithromycin triple therapy was used in 44 patients, yielding eradication in 41 (93.2% ITT), numerically superior to PPI-based regimens though the difference did not reach statistical significance in this sample ($p = 0.48$). In 24 patients with clarithromycin-resistant strains confirmed by PCR, rifabutin-based salvage therapy achieved eradication in 19 (79.2%).

Discussion

The findings of this study reinforce several key themes emerging from contemporary gastroenterology literature. The prevalence of H. pylori infection at 66.2% in our cohort is consistent with Central Asian epidemiological data and underscores that this organism remains the dominant aetiological driver of chronic gastritis in our region. The high proportion of OLGA stage III-IV disease (19.2%) is particularly noteworthy, as this subgroup carries the greatest risk of malignant progression and requires structured endoscopic surveillance at intervals of no more than three years, as recommended by both the ESGE MAPS III guidelines and the RGA clinical recommendations of 2021. The superiority of NBI chromoendoscopy over standard white-light endoscopy in detecting intestinal metaplasia - demonstrated by a 23.7% improvement in detection rate in our series - supports its routine integration into endoscopic practice. This observation aligns with the findings of Drapkina et al. (2023), who emphasised that high-quality endoscopy with virtual chromoendoscopy is essential for the meaningful staging of precancerous conditions.

Regarding eradication therapy, the shift away from empirical clarithromycin-based triple therapy is both warranted and overdue. The global rise in clarithromycin resistance - exceeding 15-20% in many European and Asian settings - has reduced eradication rates with standard triple therapy to below 80%, a threshold generally considered clinically unacceptable. The ACG 2024 guideline explicitly recommends against empirical clarithromycin triple therapy in regions where resistance exceeds 15%. Our data are consistent with this position: vonoprazan-based regimens achieved numerically higher eradication rates (93.2%) than bismuth quadruple therapy (89.7%), and the performance of vonoprazan in clarithromycin-resistant populations - as demonstrated in the phase 3 PHALCON-HP trial - makes it particularly attractive in settings

where susceptibility testing is not universally available. The serological pepsinogen panel showed strong performance as a non-invasive surrogate for corpus atrophy, with a negative predictive value of 93.1%. This supports its role in population-level screening, particularly in resource-limited settings where immediate access to high-resolution endoscopy may be constrained. A PgI/PgII ratio below 3.0 combined with absolute PgI below 70 ng/mL identifies individuals warranting priority endoscopic investigation, thereby enabling more efficient allocation of endoscopic resources. One limitation of the present study is its single-centre design, which may restrict generalisability. Additionally, long-term follow-up data on mucosal regression after eradication were not available within the study window, a gap that future prospective studies should address.

Accurate diagnosis of gastritis requires integrated endoscopic, histological, and serological evaluation. First-line eradication must be guided by local resistance profiles, with vonoprazan-based and bismuth quadruple regimens preferred over empirical clarithromycin triple therapy. Patients with advanced precancerous changes (OLGA III-IV) require structured long-term endoscopic surveillance.

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