INPLASY

Discriminative Performance of Serologic Biomarkers in Autoimmune Gastritis – A Systematic Review and Meta-analysis

INPLASY202610056

doi: 10.37766/inplasy2026.1.0056

Received: 16 January 2026

Published: 16 January 2026

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ADMINISTRATIVE INFORMATION

Support - Not applicable.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202610056

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 January 2026 and was last updated on 16 January 2026.

INTRODUCTION

Review question / Objective To help to better characterize AIG population in regards to biomarkers (PCA, IF-Ab, gastrin, CgA, PGI, PGI/PGII) and to better characterize this population's risk to gastric cancer.

Condition being studied Autoimmune gastritis (AIG) is an antibody-mediated inflammatory process targeting H+/K+ ATPase of parietal cells, leading to loss of intrinsic factor, decreased acid production, and histological changes of the mucosa. These processes result in increased risk for anemia, nutritional deficiencies, and gastric cancer. Given the growing prevalence of AIG and its often late diagnosis, a "serological biopsy" has been proposed as a possibility for earlier detection.

METHODS

Search strategy Two medical librarians curated and executed comprehensive search strategies in accordance with PRISMA 2020 guidelines. Searches were performed on March 12, 2025, using four databases: PubMed (MEDLINE), Embase (Elsevier), Web of Science – All Databases, and the Cochrane Library. Controlled vocabulary specific to each database (MeSH and Emtree) and keyword terms related to AIG and the prespecified serologic biomarkers were used. Searches were limited to English-language publications.

Participant or population Patients with biopsy-proven autoimmune gastritis (AIG).

Intervention Measured levels of serological markers, including 1) parietal cell antibody (APCA, PCA), 2) intrinsic factor antibody (IF-Ab), 3) gastrin, 4) chromogranin A (CgA), 5) pepsinogen I, and 6) pepsinogen I/II ratio.

Comparator General population at average risk of gastric cancer.

Study designs to be included All case-control, cross-sectional, cohort, randomized control, prospective, or retrospective studies.

Eligibility criteria Studies were included if there was a cohort of biopsy proven AIG with appropriate non-diseased control group of adult patients and measured at least one biomarker – PCA, IF-Ab, gastrin, CgA, PGI, or PGI/PGII.

Information sources Comprehensive search strategies in accordance with PRISMA 2020 guidelines. Searches were performed on March 12, 2025, using four databases: PubMed (MEDLINE), Embase (Elsevier), Web of Science – All Databases, and the Cochrane Library.

Main outcome(s) Serological biomarker positivity and levels (PCA, IF-Ab, gastrin, CgA, pepsinogen I, pepsinogen I/II), H. pylori status, percentage with AIG, mean or median age, and percentage female.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale was used to assess quality with a scale from 0 to 9. Bias was evaluated via contour enhanced funnel plots.

Strategy of data synthesis Descriptive statistics, including sensitivity and specificity, were calculated. A REITSMA bivariate model was used to generate a summarized receiver operator characteristic curves for the categorical biomarkers – PCA and IF-Ab. A random effects model was used to calculate the pooled mean differences between those with and without AIG for continuous biomarkers gastrin, CgA, PGI, and PGI/PGII. Heterogeneity variance was estimated using the restricted maximum-likelihood estimator. Inverse variance method weighting was used to calculate the pooled mean differences. Subsequently, univariate analysis was used to estimated the pooled mean differences between those with and without AIG.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Language restriction English only.

Country(ies) involved USA and Taiwan.

Keywords autoimmune gastritis; serologic biomarkers; meta-analysis.

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