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# Progression of endoscopic findings in patients with autoimmune gastritis

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## Background/aims

Autoimmune gastritis (AIG) is a progressive inflammatory disease characterized by severe atrophy of the gastric body and sparing of the antrum. However, it is very difficult to find endoscopic clues of the AIG before advanced atrophy. We compared past endoscopic imaging records of patients diagnosed with AIG to determine how endoscopic atrophy progressed.

## Methods

From July 2021 to March 2023, among patients who visited the hospital for upper gastrointestinal (GI) endoscopy due to health checkups or GI symptoms, we enrolled patients with serologically positive of anti-parietal cell antibody, endoscopically extensive corpus dominant atrophy of the stomach and histologically diagnosed with AIG. The study analyzed the degree of endoscopic atrophy in patients diagnosed with AIG, who had a minimum of three previous endoscopic records at least two-year intervals. The endoscopic corporal atrophy score was calculated on a visual analogue scale by summing the scores from lesser curvature, greater curvature, and fundus (Figure 1).

## Results

A total of 33 AIG patients were enrolled in the study. Among them, 10 patients had confirmed past endoscopic imaging records. The male-to-female ratio was 1:4, and serological atrophy (median pepsinogen Ⅰ was 12.9 ng/mL and pepsinogen Ⅰ/Ⅱ ratio was 0.91) was observed. The average gastrin value was 444.9 pg/mL. The endoscopic follow-up period for all patients was 7.8 years, with a mean time of 2.2 years between the previous endoscopic examination and the endoscopy leading to the diagnosis of AIG (Table 1). The subjects were divided into two groups based on their history of *Helicobacter pylori* (*H. pylori*) infection, and it was found that gastrin levels were statistically higher in the *H. pylori* naïve group in the serological tests. Furthermore, the period until a change in the endoscopic corporal atrophy score occurred after the initial endoscopic examination was statistically shorter in *H. pylori* naïve group (Table 2) (Figure 2).

**Figure 1.** The endoscopic corporal atrophy score was calculated on a visual analogue scale ranging from 0 to 3. This is based on multiple criteria, including the presence of gastric folds, mucosal swelling, remaining oxyntic mucosa, the extent of atrophy, and observation of submucosal vasculature. Theses assessments are made by dividing the lesser and greater curvature of the gastric body respectively. Fundal atrophy was categorized as either 0 or 1 depending on its presence or absence. The overall score was calculated by summing the scores from three areas.

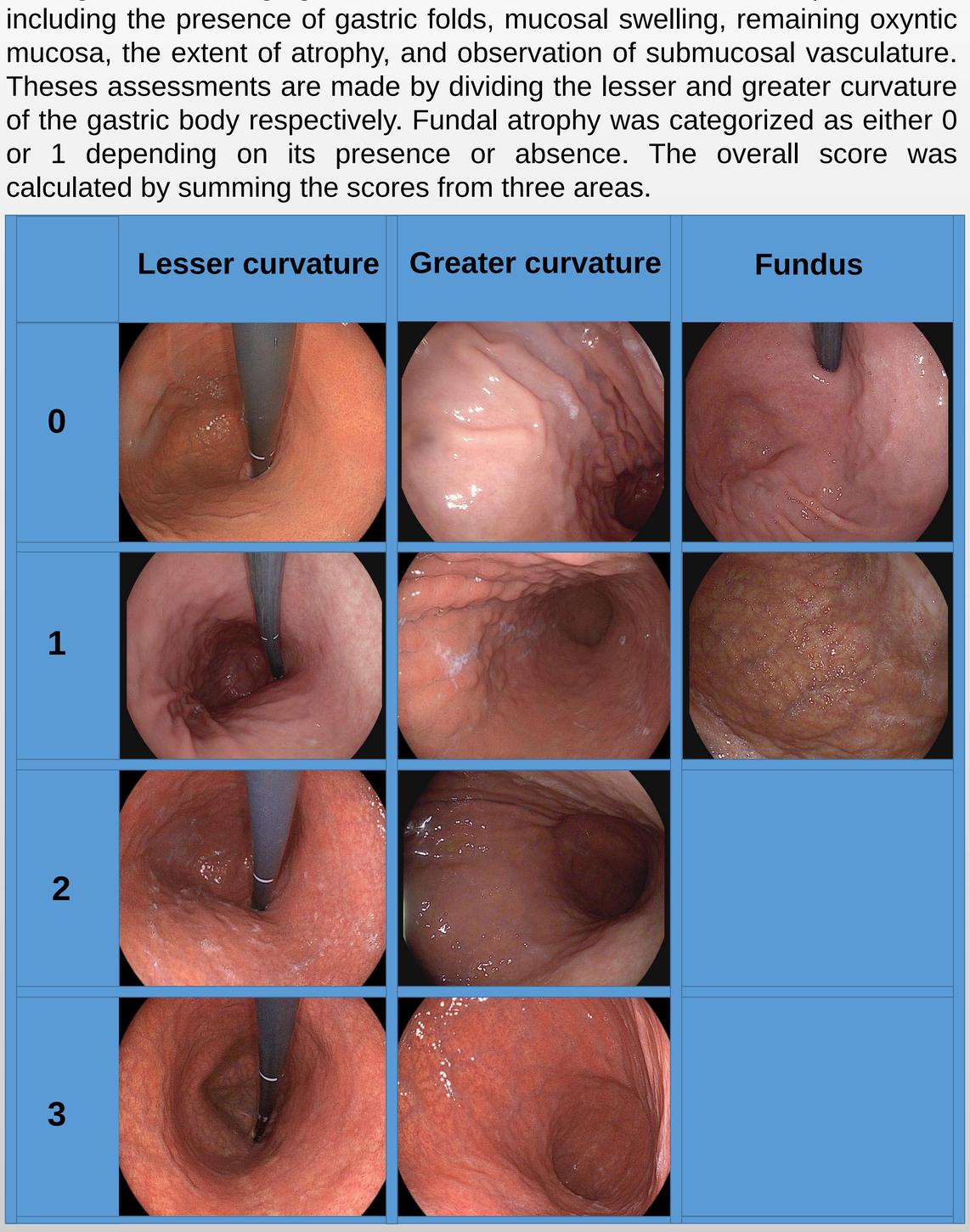


**Figure 2.** Endoscopic findings of greater curvature in patients with and without *H. pylori* infection on periods according to the change of corporal atrophy score. *$p$ <0.05

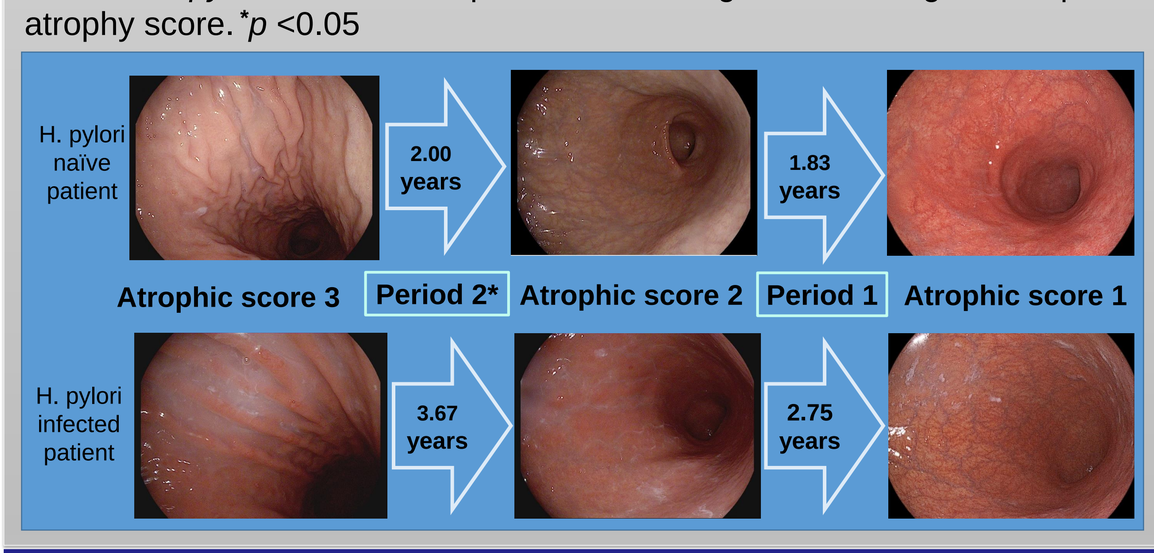


**Table 1.** The baseline characteristics of patients with confirmed past endoscopic imaging records in autoimmune gastritis.

| Characteristics | Total patients |
|---|---|
| Female/Male, N | 8 / 2 |
| Age, years | 64.7±10 |
| Pepsinogen I, ng/mL | 12.9±8.9 |
| Pepsinogen II, ng/mL | 14.6±4.0 |
| Pepsinogen I/II | 0.91±0.63 |
| Gastrin, pg/mL | 444.9±274.5 |
| Anti-parietal cell antibody, N | 10 (100%) |
| Anti *H. pylori* IgG titer, U/mL | 1.02±1.2 |
| *H. pylori*, N (%) | 4 (40) |
| Hemoglobin, g/dL | 12.8±2.0 |
| Ferritin, ng/mL | 95.5±74.2 |
| MCV, Fl | 93.1±5.3 |
| Vitamin B12, pg/mL | 267.9±145.5 |
| Iron deficiency anemia, N | 1 (10%) |
| Autoimmune thyroiditis, N | 5 (50%) |
| Gastric neoplasm, N | 5 (50%) |
| Gastric adenoma | 3 (60%) |
| Subepithelial tumor | 2 (40%) |
| Duration of endoscopic follow up, years | 7.8±2.2 |
| Duration until advanced corporal atrophy, years | 2.2±1.0 |

**Table 2.** Comparison of progressive endoscopic corporal atrophy scores in patients with or without *H. pylori* infection.

| | *H. pylori* naïve patients | *H. pylori* infected patients | *p* value |
|---|---|---|---|
| Female/Male, N | 6/0 | 2/2 | 0.133 |
| Age, years | 65.7±12.7 | 63.3±6.6 | 0.738 |
| Pepsinogen I, ng/mL | 10.5±5.4 | 16.5±12.8 | 0.329 |
| Pepsinogen II, ng/mL | 13.6±4.1 | 16.1±3.9 | 0.360 |
| Pepsinogen I/II | 0.8±0.4 | 1.1±0.9 | 0.466 |
| Gastrin, pg/mL | 597.7±226.7 | 215.8±154.0 | 0.019* |
| Anti *H. pylori* IgG titer, U/mL | 0.48±0.12 | 1.84±1.69 | 0.078 |
| Atrophy score 1 | 6.83±0.4 | 6.75±0.5 | 0.779 |
| Period 1 | 1.83±0.4 | 2.75±1.5 | 0.183 |
| Atrophy score 2 | 4.83±0.4 | 4.50±0.6 | 0.312 |
| Period 2 | 2.00±0.0 | 3.67±0.6 | 0.007* |
| Atrophy score 3 | 1.33±1.5 | 2.33±1.5 | 0.468 |

Values are expressed as the number of subjects and mean±SD. *p* value; Paired t-test and Fisher's exact test, *$p$ <0.05. Atrophy score 1 refers to the corporal atrophy score at the time of diagnosing autoimmune gastritis. Atrophy score 2 refers to the corporal atrophy score at the point when the endoscopic score changed in observation patients. Atrophy score 3 refers to the corporal atrophy score at the first endoscopy in observation patients. Period 1 is the duration of time between the atrophy score 1 and the atrophy score 2. Period 2 is the duration of time between the atrophy score 2 and the atrophy score 3.

## Conclusions

AIG is a disease in which endoscopic atrophy progresses over time. In AIG patients, infection with *H. pylori* may affect the rate of atrophy progression.