Primary gastric amyloidosis: Clinical significance of observation using narrow band imaging

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Abstract: A 68-year-old woman was diagnosed as having rare primary AL amyloidosis localized in a small IIc-like gastric ulcer at the posterior wall of the antrum. The remarkable infiltration of plasma cells was found: the lambda positive cells were dominant than the kappa positive cells. Six months after the diagnosis, the IIc-like legion changed to the shallow and broad ulcer, resulting in no definite changes during the several-year observation. Narrow Band Imaging (NBI) identified the margin of these amyloidosis related ulcer more distinctively than normal lights with diffuse whitish appearance. In the similar case with the shallow ulcer induced by microcirculation disturbance with amyloid deposit, NBI was also useful to distinguish the margin of amyloid deposit from non-deposit legion. To establish the clinical significance, the accumulation of data based on pathological analysis is thus called for.

[Key Words] Gastric amyloidosis, narrow band imaging

Introduction

Amyloidosis is defined as extracellular deposition of abnormal protein and diagnosed from the specific pathological findings with Congo Red staining. Secondary (AA) amyloidosis is triggered by various diseases: its prognosis generally depends on the severity of disease backgrounds. We encountered a patient with primary (AL) amyloidosis in a IIc-like tiny gastric ulcer which was under observation for several years. Here, we report the clinical data and the significance of narrow band imaging (NBI) based on the macroscopic findings.

Case Report

The patient was a 68-year-old woman. The height was 160 cm and body weight was 60 kg. Nothing was specific in her physical findings, personal or family history. Since the patient had an inactive duodenal ulcer, she had been under observation since 1990. The laboratory findings in 2013 showed no abnormalities. Esophagastroduodenoscopy (EGD:OLYMPUS GIF-XP150N, NBI not attached) in 2013 detected a tiny IIc-like ulcer at the posterior wall of the antrum without fold convergency (Fig. 1, indicated by arrows). The pathological findings of gastric mucosa obtained near the ulcer showed acute and chronic inflammation with the remarkable infiltration of plasma cells. A low cellularity component with mild acidity was found in the parenchyma, which was positive with Congo Red staining and compatible with amyloid deposition (Fig. 2). The examination for monoclonal amyloid deposits using immunostaining indicated as follows: 1)
Amyloid P was positive; 2) amyloid A was negative; and 3) β2-MG was not fully evaluated with co-staining (data not shown). The secondary amyloidosis with impaired renal function was ruled out according to the laboratory data. The infiltrative plasma cells were positive for CD138 and negative for both CD20 (L26) and bcl-6. Among these plasma cells, the lambda positive cells were dominant compared with the kappa positive cells (data not shown). Follow-up EGD (OLYMPUS : GIF-H260, NBI attached) six months after the diagnosis showed that the IIc-like legion recognized by previous EGD changed to a shallow and broad ulcer (Fig. 3-a); NBI clearly depicted the area with diffuse whitish legion compared with standard imaging (Fig. 3-b). The three-time follow-up observations until 2017 using OLYMPUS GIF-XP 170N with NBI and the pathological findings resulted in no obvious changes. Computed tomography in the chest, abdomen and colon in 2014 showed no abnormal findings.

Discussion
The prognosis of amyloidosis-associated disease is greatly influenced by the severity of primary disease and complications. Our patient was diagnosed as having AL amyloidosis localized in the stomach presenting a small ulcer without severe basic backgrounds. The cases of AL amyloidosis localized in the stomach are quite rare: the previously reported macroendoscopic findings and outcomes are varied\(^1\)\(^{-}\)\(^8\). Our patient had no aggravations or complications, such as gastrointestinal hemorrhage during the observation term, resulting in favorable prognosis. According to the results of our case, regular EGD is recommended for detecting the unexpected changes in the amyloid related ulcer legions. The clinical significance in surveillance for colonic polyp using NBI has already been established\(^9\). In the present case, NBI, rather than standard imaging, clearly and precisely depicted the amyloid related shallow and broad

![Fig. 1](image1.png) Images depicted by esophagogastroduodenoscopy (EGD). Tiny IIc-like ulcer at the posterior wall of the antrum without fold convergency.

![Fig. 2](image2.png) Pathological findings of gastric mucosa. Positive fibrotic component in the parenchyma detected by Congo Red staining (Congo-red).

![Fig. 3](image3.png) Comparison of EGD images with normal light (a, left) and narrow band imaging (b, right) after six month of the diagnosis. Narrow band imaging showed the margin of the ulcer more distinctively than normal lights.
ulcer. This fact suggested that NBI should be useful to distinguish amyloid positive legions from non-amyloid deposited legions. To date, no studies have reported the usefulness of NBI in the pathological analyses for identifying amyloid related ulceration. NBI provides enhanced mucosal surface capillary and mucosal fine appearance using two different wavelength bands that are preferentially absorbed by hemoglobin; thus, NBI findings are probably influenced by gastric mucosal and submucosal microcirculation disturbance induced by amyloid depositions. To establish the clinical significance of NBI in gastric amyloidosis, the accumulation of macroendoscopic data using NBI supported by pathological analyses is required.

References