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Opinion

Emerging Role of Magnifying Narrow Band Imaging in Early Gastric Cancer

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Narrow band imaging (NBI) is a novel endoscopic imaging technique that enables characterization of subtle mucosal changes [1]. The bandwidths of the blue and green filters used in NBI are narrowed, which forms a narrowed wavelength of light. This light is maximally absorbed by hemoglobin, enhancing the visualization of capillary microvasculature. It also has a relatively more superficial penetration compared to conventional white light, thus accentuating surface microstructure.

Magnification endoscopy with NBI findings of the normal stomach (Figure 1) differ depending upon the part of the stomach, that is, the gastric body or the gastric antrum [2-5]. The morphology of the subepithelial capillary network (SECN) together with the collecting venule (CV) can be the basic anatomical component for analysis of the microvascular (MV) architecture.

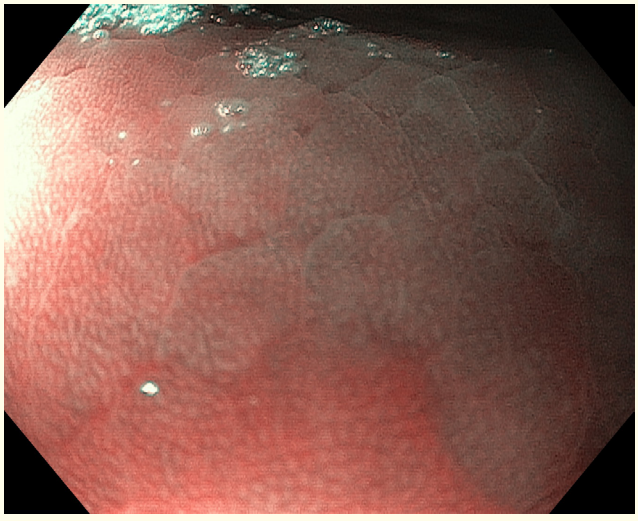

Figure 1: *Honeycomb pattern in normal stomach body mucosa.*

Basic microvascular findings of gastric corpus mucosa is a regular honeycomb-like sub-epithelial capillary network (SECN) pattern with presence of a regular CV pattern; and a regular oval crypt-opening pattern. A polygonal loop of a subepithelial capillary surrounds each gastric crypt opening, and these loops form a honeycomb-like network beneath the epithelium and converge onto a collecting venule. The antral mucosa represents a coil-shaped SECN pattern. Collecting venules are rarely observed on the mucosal surface within the gastric antrum.

Critical point in the strategy for magnifying endoscopic diagnosis of gastric cancer is the "macroscopic appearance-specific" approach (Figure 2 A and B). Gastric cancers show broad spectra in both microscopic and macroscopic appearance. Superficial gastric cancers are classified into three subtypes based on macroscopic appearance: superficial elevated type (0IIa), superficial depressed type (0IIc), and superficial flat type (0IIb). Also magnifying endoscopic diagnosis of gastric cancer depends on the findings of fine mucosal structures (FMS). As around 20% of superficial gastric carcinomas do not give a clear borderline on conventional white light endoscopy, accurate endoscopic diagnosis plays a crucial role for a radical cure, especially in endoscopic resection. Endoscopic submucosal dissection (ESD), a recently developed superb method that enables an en bloc resection for large lesions, can achieve a more radical cure in combination with precise endoscopic diagnosis of the cancerous extent.

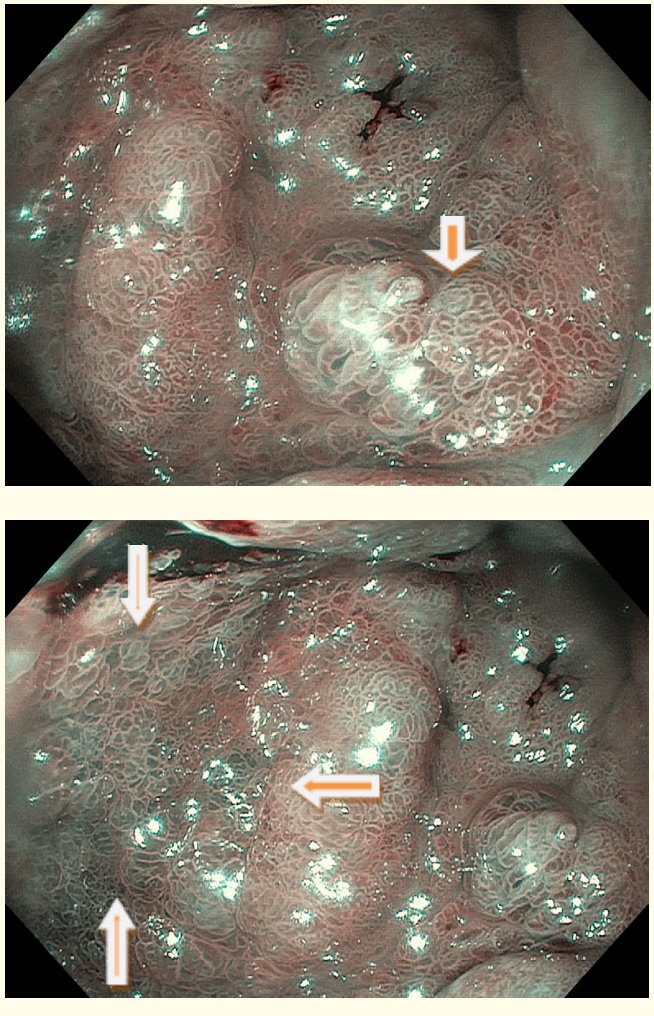

Figure 2 (A and B): *Magnifying endoscopy with NBI conveyed clear images of irregular microstructures that demonstrate the margin of lateral cancerous extent very well.*

Recently published meta-analysis on magnifying NBI for early gastric cancer showed a pooled sensitivity, specificity and diagnostic odds ratio 0.86 (95%CI: 0.83 - 0.89), 0.96 (95%CI: 0.95 - 0.97) and 102.75 (95%CI: 48.14 - 219.32), respectively, with the area under ROC curve being 0.9623 [6].

Early detection and therapy for gastric cancer can improve 5 year survival rates to 96%, compared to the high mortality of advanced gastric cancer [7]. In conclusion, ME-NBI is a reliable technique for EGC diagnosis and has a better diagnostic performance than conventional white light endoscopy (C-WLE). So switching from conventional white light endoscopy to magnifying narrow band imaging endoscopy is the emerging technology for detecting the early gastric cancer.

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