Tissue sampling using a submucosal tunnelling technique for indefinite gastric amyloidosis

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CASE PRESENTATION

An 80-year-old man with epigastric discomfort underwent upper gastrointestinal endoscopy. Endoscopic findings revealed a granular, elevated lesion (diameter 20 mm) localized to the posterior wall of the prepyloric ring (Figure 1). Abdominal ultrasonography revealed a hypoechoic mass localized to the submucosa. Although biopsy samples were acquired from the epithelium of this lesion to differentiate among gastric epithelial neoplasms, including carcinoma, lymphoma and other diseases, these samples could not histologically diagnose the lesion. After obtaining informed consent, a submucosal tunnelling procedure was selected, considering the antral stricture after endoscopic mucosal resection. We have developed a submucosal tunnelling technique for sampling submucosal tumours, which can visualize tumour surfaces and obtain tissue samples under direct visualization (1,2). After marking the normal mucosa around the lesion with 10 mm margins, a small incision was made to create a 10 mm opening flap (Figure 2). The submucosa was dissected toward the lesion, creating a submucosal tunnel. A whitish mass was visually identified in the submucosal tunnel, and several tissue samples were obtained using biopsy forceps (Radial Jaw 4 Standard Capacity, Boston Scientific, Japan) (Figure 3). The opening flap was completely closed by hemoclips (HX-610-135; Olympus, Japan) to prevent delayed complications. There were no complications associated with this procedure. Histological examination using Congo red staining was positive for amyloid protein and exhibited green birefringence under polarized light microscopy. A diagnosis of gastric amyloid was made, and the patient was systemically examined, resulting in a light-chain fragment type of localized gastric amyloidosis.

Figure 1) Endoscopic findings showing a granular-elevated lesion (20 mm diameter) localized to the posterior wall of the prepyloric ring

Figure 2) Endoscopic view showing a 10 mm opening flap created after marking the antral normal mucosa around the lesion with 10 mm margins

Figure 3) Endoscopic findings showing a whitish mass (arrows) visually identified in the dissected submucosal tunnel toward the lesion. Tissue samples from the mass were obtained using biopsy forceps

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DISCUSSION

Amyloidosis primarily demonstrates systemic involvement of multiple tissues and organs; however, an amyloid deposit localized to the stomach is highly unusual.

Histological confirmation of gastric amyloidosis using biopsy specimens appears to be occasionally difficult because of its infiltration of the submucosa, and the diagnosis of amyloidosis has been finalized in some cases only after invasive surgical resection (3). Recently, endoscopic mucosal resection has been used to obtain a larger resected specimen compared with a biopsy specimen (4). However, the method has some risks for delayed complications such as bleeding and stricture. The sampling method we developed, involving submucosal endoscopy with a mucosal flap (5), takes advantage of acquiring proper specimens under direct visualization, identifying the tumour itself and preventing adverse events owing to a safety mucosal flap. Accordingly, this novel method may be an alternative for acquiring adequate tissue samples of indefinite subepithelial lesions, leading to accurate therapeutic planning.

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