ENDOSCOPIC MUCOSAL RESECTION WITH A CAP-FITTED ENDOSCOPE FOR EARLY GASTRIC CARCINOMA WITH FOCAL SUBMUCOSAL INVASION IN A PATIENT WITH DECOMPENSATED LIVER CIRRHOSIS

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Abstract: Prognosis for patients with early gastric cancer who undergo gastric resection is far better than that for patients with advanced disease. However, patients with advanced liver cirrhosis may not be suitable for general anesthesia and major surgery. We used a less invasive endoscopic mucosal resection (EMR) with a cap-fitted endoscope to resect an early gastric cancer in a 58-year-old male with decompensated liver cirrhosis. Although postoperative pathology revealed that the tumor had focal invasion to the submucosa, the patient had an uneventful course and was well during 4 years’ follow-up. This method may be effective for the treatment of early gastric cancer with focal submucosal invasion when patients are not suitable for major surgery.

Case Report

A 58-year-old male patient was admitted to our hospital due to persistent, dull, epigastric pain and liver cirrhosis (hepatitis B virus- and alcohol-related) with moderate ascites. Laboratory findings revealed: hemoglobin, 92 g/L; platelet count 95 x 10^9/L; prothrombin time, 15.2 seconds (normal, 10.7–13 seconds). Biochemistry values included: albumin, 28 g/L (normal, 35–50 g/L); total bilirubin, 64.9 µmol/L (normal, < 17.1 µmol/L); direct bilirubin, 47.8 µmol/L (normal, < 3.4 µmol/L). Upper gastrointestinal endoscopy revealed marked blue esophageal varices (Cbf2Lm, RC sign positive) and one irregular-shaped depressed lesion with superficial erosion measuring about 1.0 cm in diameter at the antrum (Fig. 1A). Biopsy specimens taken from the depressed lesion showed well-differentiated intestinal adenocarcinoma with a tubuloglandular arrangement (Fig. 2A). Endoscopic ultrasonography (EUS) disclosed abnormalities of the mucosal layer with slight thickening of the muscularis mucosae. However, no obvious perigastric lymph node involvement was found. Because this patient would have been at increased risk during major surgery and general anesthesia, we resected this lesion using EMR with a cap-fitted endoscope. First, we injected 8 mL normal saline into the submucosa at the periphery of the lesion so that the lesion became more elevated. We then snared and ligated the aspirated mucosa. Finally, we excised the lesion using electrocautery. The course was smooth and no severe bleeding was encountered. The excised specimen measured about 0.8 x 0.6 x 0.3 cm.
Histologic study revealed a picture of well-differentiated intestinal adenocarcinoma mainly located at the mucosa but with focal extension to the submucosa. The resection margins were free of cancer cells (Fig. 2B). Upper gastrointestinal endoscopy was performed on the second day after EMR and a deep round ulcer with a well-demarcated margin was found (Fig. 1B). A third follow-up endoscopy 2 months later disclosed an ulcer scar at the original ulcer site (Fig. 1C). Biopsies showed no evidence of malignancy. Annual follow-up endoscopy found no evidence of recurrent gastric cancer for 4 years after the procedure.

**Discussion**

About 2,374 people died of gastric cancer in Taiwan in 2000. Gastric cancer ranked fourth in cancer mortality for 2000 according to statistics reported by the Department of Health. The most important prognostic factor for gastric cancer is the stage of the tumor at the time of diagnosis or resection. The prognosis for early gastric cancer is excellent, with reported postoperative 5- and 10-year survival rates of 88 to 97.5% and 72.6 to 96.4%, respectively, calculated using the life table method [5–7]. Therefore, early gastric cancer could be considered a curable disease.

EMR has been used to treat early gastric cancer for more than 10 years in Japan. Clinical results for EMR have been similar to surgery [8]. EMR makes minimally invasive treatment possible, and maintains normal upper gastrointestinal function after treatment [8].

Inoue et al first developed the technique of EMR with a cap-fitted endoscope for early cancer of the esophagus, stomach, and colon in 1993 [9]. In 1994, they devised a pre-looped plastic cap, which incorporates a circular gutter at its tip with the snare wire fixed just inside it [10]. We successfully applied this modified EMR method to our patient for treatment of early gastric cancer. The indications for the application of EMR as a radical treatment...
for early gastric cancer include the following: well-differentiated adenocarcinoma limited to the mucosal layer with no accompanying ulcer; less than 20 mm elevated and flat type (I, IIa) early cancer; and less than 10 mm depressed type (IIc) early gastric cancer [11]. Although our patient had focal submucosal invasion, we resected the cancer completely and a series of follow-up endoscopies revealed no evidence of recurrence of the cancer. These findings suggest that focal submucosal invasion of early gastric cancer can be successfully resected using EMR with a cap-fitted endoscope. Recently, Fujisaki et al suggested that the indications for EMR be broadened to include early gastric cancer to a 500 µm submucosal invasion, especially if the carcinoma size is 20 mm or smaller, the histologic type is well-differentiated adenocarcinoma, and the lesion has no ulcers or scars [12]. In addition, more recently developed techniques such as EMR using an insulation-tipped diathermic knife [13] and the four-point fixation method [11] may be used to resect early gastric cancer tumors larger than 20 mm.

In conclusion, EMR with a cap-fitted endoscope appears to be an adequate therapy for early gastric cancer with only mucosal invasion. However, the use of this technique may be best suited for endoscopists experienced in the treatment of early gastric cancer with focal submucosal invasion when the patient is not suitable for major surgery.

References