Primary squamous cell carcinoma is a rare tumor of the stomach with an incidence ranging from 0.04% to 0.4% of all diagnosed gastric cancers. We report a case of squamous cell carcinoma in the stomach associated with hypertrophic gastropathy and observed as a huge mass and wall thickening on the greater curvature site by a multidetector CT.

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Primary squamous cell carcinoma of the stomach is a rare epithelial tumor with an incidence ranging from 0.04% to 0.4% of all diagnosed gastric cancers (1). To date, only 80 cases have been reported in the English literature (2). Moreover, the multidetector CT (MDCT) findings associated with primary squamous cell carcinoma of the stomach have not yet been reported. We report a case of primary squamous cell carcinoma of the stomach, which was manifested as a large ulcerofungating mass by a MDCT.

Case Report

A 40-year-old man diagnosed with a gastric mass via an endoscopic examination from a local clinic, was admitted at the Guro Hospital of Korea University, for further evaluation and treatment. The patient had been in good health prior to his illness, but began suffering from epigastric soreness and nausea for six months. The onset of pain began intermittently, and gradually became more constant. A series of laboratory examinations performed after being admitted did not reveal any abnormalities except for anemia (hemoglobin 9.8 g/dL). Moreover, the CEA and CA 19-9 serum level was within the normal range.

The CT images of the abdomen were acquired using a 16-slice MDCT scanner (Sensation 16; Siemens, Germany). A contrast agent was injected intravenously at 3 cc/sec, followed by image acquisition 75 seconds later. The MDCT study was performed at the following parameters: 120 kV, 140 mA, and a 0.75-mm beam collimation at a 10-mm/rotation table speed. The CT images were obtained at a supine position, from just above the diaphragm, to immediately below the pelvis. All the obtained images were stored in DICOM (Digital Imaging and Communications in Medicine) format. Digital data were sent to a PACS server (Infinitt; Seoul, Korea), and were distributed to workstations (Infinitt). The 3D reconstruction was achieved by downloading all images onto a local hard drive of a display
workstation.

An axial CT scan revealed a large ulcerofungating mass (greater than 8 cm) involving the gastric body and antrum, with a particular presence on the posterior wall and greater curvature side, as well as thickening of the adjacent mucosal folds (Fig. 1). The invasion of the transverse colon was suspected from the interpretation of the coronal reformatted images (Fig. 2). In addition, thickened gastric mucosal folds also appeared near this mass (Fig. 2). A CT gastrography and virtual gastroscopy images revealed a large ulcerofungating mass at the posterior wall and the greater curvature side of the gastric body and antrum (Fig. 3, 4). However, no distant metastasis was evident on the preoperative imaging studies.

A total gastrectomy, esophagojejunostomy, and segmental resection of the transverse colon was performed, and the resultant surgical specimen showed an ulcerofungating mass measuring 6 cm by 8 cm at the greater curvature site of the gastric body and antrum (Fig. 5). In addition, the gastric mucosa located adjacent to the tumor was thickened with prominent rugal folds. The pathologic diagnosis yielded a well-differentiated squamous cell carcinoma with an invasion of the perigastric mucosa.

**Fig. 1.** Axial CT scan showing a large ulcerofungating mass [arrow] involving the gastric body and antrum and is particularly present on the posterior wall, greater curvature side, and thickening of the adjacent mucosal folds [arrowhead].

**Fig. 2.** A coronal reformatted image reveals a large ulcerofungating mass on the greater curvature of the body and antrum [arrows]. The invasion of the transverse colon is suspected [arrowhead]. Thickened gastric mucosal folds [double arrow] are also seen near the mass.

**Fig. 3.** A CT gastrography image with a 3D surface rendering technique shows a large ulcerofungating mass on the greater curvature side of the gastric body and antrum [arrows].

**Fig. 4.** A CT virtual gastroscopy image shows a large ulcerofungating mass [arrow] observed at the posterior wall of the gastric body and antrum. See markedly thickened gastric mucosal fold [arrowhead] at the lesser curvature side of the gastric body.
fat and extension to the transverse colonic wall (Fig. 6). No metastasis was found in all the 61 resected lymph nodes. The prominent mucosa of the gastric body was confirmed by hypertrophic gastropathy. In addition, no adenocarcinomatous component was identified, even after examining all the sections in the specimen under a microscope. The patient did not show postoperative complications, and a gastrograffin swallow obtained 14 days after the operation revealed no anastomotic leak. Lastly, the patient was treated with 5 cycles of 5-FU and cisplan.

**Discussion**

Primary squamous cell carcinoma is an extremely rare tumor of the stomach, with an incidence of 0.04-0.4% of all cases of gastric cancer (1). To date, only 80 cases of this illness have been published. The diagnostic prerequiste for primary squamous cell carcinoma of the stomach, as defined by Parks (3), is as follows: the tumor must not be located in the cardia, the tumor must not extend into the esophagus, and there must be no evidence of squamous cell carcinoma in any other organ. The pathologic diagnosis is based on the following criteria: well-defined cell masses with whorl and pearl formation, no evidence of glandular differentiation within the tumor, intense cytoplasmic eosinophilia, and immunohistochemical staining revealing the presence of high-molecular-weight cytokeratin (4). However, the pathogenesis of pure gastric squamous cell carcinoma remains obscure. Some pathologists have implicated squamous metaplasia of the gastric mucosa as the precursor of the transformation to squamous cell carcinoma.

The data pertaining to the patient’s prognosis are also contradictory. While chemotherapy combined with surgical resection is reported to improve the prognosis, the consensus is that gastric squamous cell carcinomas are aggressive tumors.

Of the 80 published cases of this disease, gastric squamous cell carcinoma tends to occur in the proximal third of the stomach, most frequently along the lesser curvature, and it affects a slightly younger age group with a greater male preponderance compared to adenocarcinoma (2).

According to the literature, the CT findings of squamous cell carcinomas of the stomach were huge masses within the gastric wall and were different from adenocarcinomas of the stomach (1, 5). However, the MDCT findings have not yet been reported. In recent years, with the development of MDCT technology, three-dimensional images such as MPR images, CT gastrography, and virtual gastroscopy have been introduced and provide more information on diagnosing gastric diseases. Particularly, these techniques accentuate the stomach wall and folds such that a CT gastrography and virtual gastroscopy can visualize mucosal lesions of the stomach, similar to a barium study and endoscopy (6).

Based on our study, a squamous cell carcinoma of the stomach is presented as a huge ulcerofungating mass on the posterior wall and the greater curvature side, as well as the thickening of mucosal folds due to associated hypertrophic gastropathy on MDCT images. The invasion of the transverse colon was preoperatively diagnosed on
the coronal reformatted images. A virtual gastroscopy also showed an ulcerofungating mass at the posterior wall of the gastric body and antrum. There was, however, no specific finding suggesting the presence of squamous cell carcinoma, which was different from the common malignant gastric tumors such as adenocarcinomas and lymphomas.

In conclusion, we experienced a case of primary squamous cell carcinoma of the stomach which manifested as a huge ulcerofungating mass on the posterior wall and greater curvature side of the body and antrum. However, it was difficult to differentiate a case of squamous cell carcinoma from other malignant gastric tumors, including adenocarcinomas and lymphomas on CT. Nevertheless, when a huge ulcerofungating gastric mass is found at CT, primary squamous cell carcinoma should be considered.

References