

Primary Pure Squamous Cell Carcinoma Originating from the Stomach

Ji Ha Kim, Jong Ho Hwang, Sun Hui Hwang¹, Sang Ho Lee, Jae Nam Lee, Jae Hoon Cheung, Dong Hoon Han, Jae Gyu Shin

Department of Internal Medicine, Busan Medical Center, Busan, Department of Surgery, Pusan National University Yangsan Hospital¹, Yangsan, Korea

Primary gastric squamous cell carcinoma represents a rare entity. Up to date, only seven cases have been reported in Korea. This paper reports a case of a 51-year-old male patient whose stomach cancer was diagnosed during general routine check-up. Upper gastrointestinal endoscopy showed a large ulcero-fungating mass on the body of the stomach. Histological examination of biopsy confirmed squamous cell carcinoma. An extended total gastrectomy including splenectomy and segmental resection of the large bowel was conducted. Postoperative adjuvant chemotherapy with capecitabine and oxaliplatin was followed. The patient has been following up the out patient's clinic after discharge. (**Korean J Helicobacter Up Gastrointest Res 2014;14:126-130**)

Key Words: Squamous cell; Stomach; Carcinoma; Neoplasms

INTRODUCTION

According to the Ministry of Health and Welfare in Korea, gastric cancer was placed on the 2nd highest diagnosed cancer and the patients who are newly diagnosed with gastric cancer amount to 30,000 every year. More than 95% of the gastric cancers were adenocarcinoma and other 4% were leiomyosarcoma and lymphoma.¹ Primary squamous cell carcinoma (SCC) originated from stomach rarely occurs, accounting nearly for 0.1~0.4% of all gastric carcinoma. Up to date, only seven cases have been reported in Korea.²⁻⁵ This paper presents a patient with gastric primary SCC, which was found in general check-up endoscopy. An additional case of pure squamous cell gastric cancer will be reported with a brief review of relevant literature.

CASE REPORT

A 51-year-old man came to hospital for his general routine check-up. He was relatively healthy but had several months of the intermittent symptoms of dyspepsia and constipation, which the patient did not feel any ne-

cessity of the treatments. On family history, his father was diagnosed with a lung cancer. One year ago, a screening endoscopy had been performed in other medical center. And at the endoscopic image, about 10 mm sized well-defined central ulceration and surrounding elevated mucosa were found on less curvature of gastric lower body (Fig. 1A) and suspicious early gastric cancer type IIc lesion was shown on the anterior wall side of gastric lower body (Fig. 1B). At both of the lesions, biopsies were performed. The results of biopsy were all chronic gastritis and even though follow-up endoscopy after one month was recommended, he has not been visited at the hospital.

Initial laboratory findings were as follows: hemoglobin 8.7 g/dL, a white blood cell count 11,800/ μ L with 67.6% neutrophil, a platelet count of 499,000/ μ L. Serum CRP 13.3 mg/dL, BUN 14.5 mg/dL, creatinine 0.9 mg/dL. Albumin 4.2 g/dL, total bilirubin 0.3 mg/dL, LDH 301 IU/L, serum iron 28 μ g/dL, total iron-binding capacity 333 μ g/dL, CEA 0.77 ng/mL and CA19-9 46.66 U/mL.

At the first visit for general check-up, an endoscopic exam was performed but failed due to a large amount of food materials left inside the stomach. Next day, the second endoscopic exam was tried. A huge ulcero-fungating lesion sized about 10 \times 6 cm surrounding from upper body to angle of the stomach with spontaneous bleeding was observed and the lesion was not expanded at the cardia

Received: February 12, 2014 Accepted: March 24, 2014

Corresponding author: Jong Ho Hwang
Department of Internal Medicine, Busan Medical Center, 359, World cup-daero, Yeonje-gu, Busan, Korea
Tel: +82-51-607-2285, **Fax:** +82-51-607-2473, **E-mail:** asluke@naver.com

Copyright © 2014 Korean College of *Helicobacter* and Upper Gastrointestinal Research

© The Korean Journal of *Helicobacter* and Upper Gastrointestinal Research is an Open-Access Journal. All articles are distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

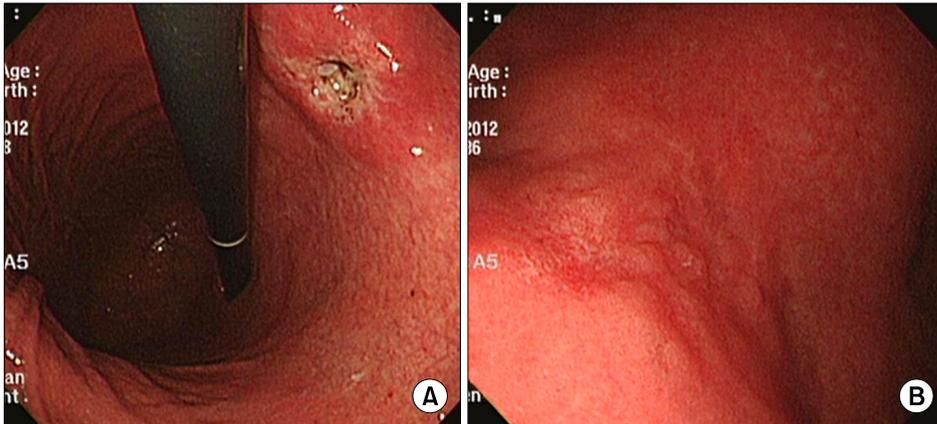


Fig. 1. Endoscopic finding (1 year ago). (A) It shows a well-defined ulcerative lesion on less curvature of gastric lower body. (B) Suspicious early gastric cancer type IIc lesion is shown on the anterior side of gastric lower body.

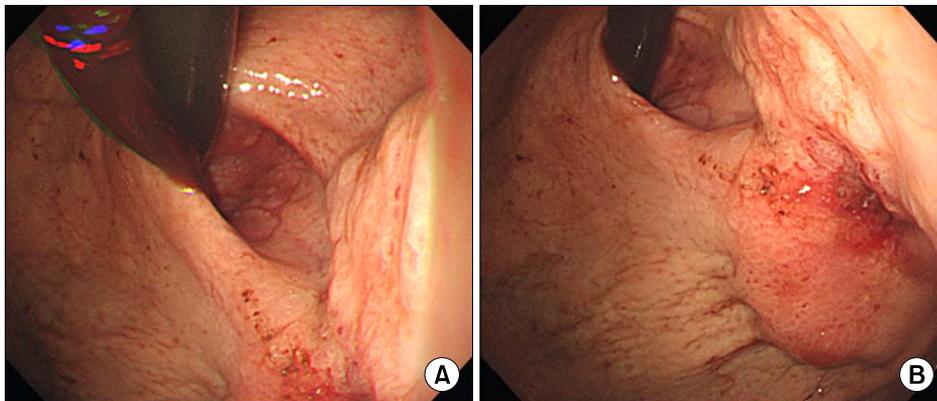


Fig. 2. Endoscopic finding. (A) It shows intact distal esophagus, esophago-gastric junction. (B) It shows some part of a huge ulcerative-infiltrative lesion from the upper body to angle with spontaneous bleeding.

(Fig. 2). From histological finding, well differentiated SCC with characteristic keratin pearl was revealed. There was no component of adenocarcinoma.

The patient was referred to tertiary medical center for surgical management. In abdominal CT, ulcero-infiltrating mass and lymph node enlargements along lesser and greater curvature of the stomach, left gastric artery and common hepatic artery were noted. In addition, peri-gastric fat and gastro-colic ligament invasion were observed and scanty ascites was also found in the pelvic cavity (Fig. 3). In PET CT, distant metastasis was not observed. Clinical stage was T4aN3Mx (Stage IIIC).

Since then, extended total gastrectomy including segmental resection of the adjacent large bowel and splenectomy was performed (Fig. 4). When the specimen was investigated, a well-defined ulcero-infiltrative mass was observed from the antrum to upper body of the stomach, which amounted to the size of 11.5×6.5 cm. In histo-

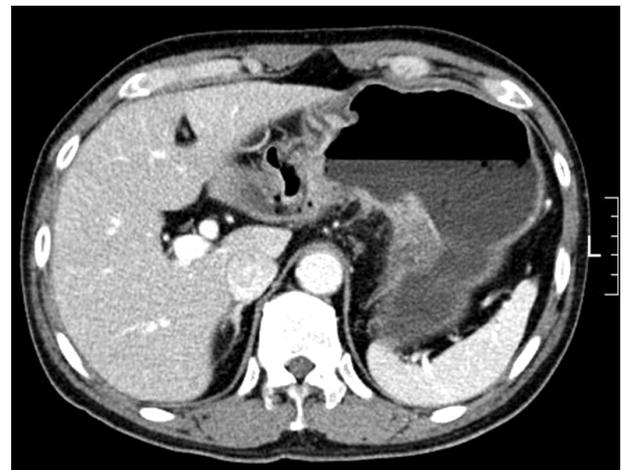


Fig. 3. Enhanced abdominal computerized tomography. About 11 cm sized ulcero-infiltrating mass from stomach upper body to angle.

logical finding, the cell type of the specimen corresponded a SCC without any components of adenocarcinoma (Fig. 5). The tumor invaded through the serosal



Fig. 4. Surgical specimens. (A) Gastric sub-serosal invasion was observed during the operation. (B) The enucleated specimen. (C) Invasion of transverse colon was suspected because transverse colon was adhered to the serosal surface of the mass.

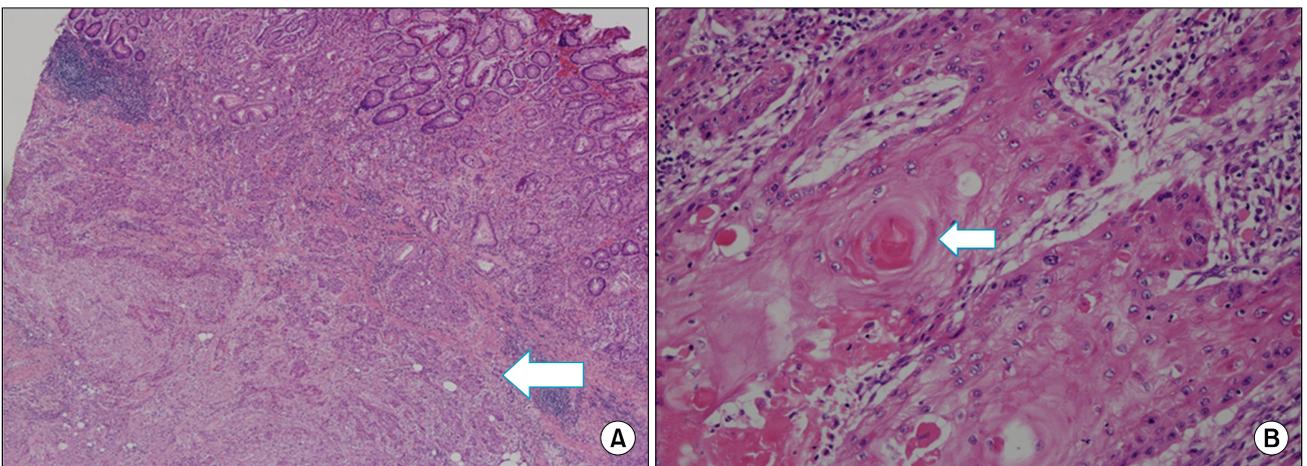


Fig. 5. Histologic features of squamous cell carcinoma of stomach. (A) Tumor invades into subserosa of stomach (white arrow) (H&E stain, $\times 40$). (B) The tumor cells show abundant eosinophilic cytoplasm with distinct cell membrane and keratin pearls (white arrow), the characteristics of squamous cell carcinoma (H&E stain, $\times 200$).

layer (T3), and had a lymph node metastasis to one out of 78 regional lymph nodes (N1). Although transverse colon was adhered to the serosal surface of the mass, no invasion of transverse colon was found out. Further, no invasion of spleen was also detected. After the surgery, the final stage was confirmed as the state of T3N1M0 (stage IIB). The patient was discharged without complications. One month later, the adjuvant chemotherapy consisted of capecitabine and oxaliplatin was given. Even though a follow-up period is not long enough, the patient has not shown any symptoms or signs of recurrence so far.

DISCUSSION

By the 2010 World Health Organization (WHO) classification,⁶ gastric tumors were classified by based on the

predominant histological pattern: tubular, papillary, mucinous and poorly cohesive (including signet ring cell carcinoma). WHO classification for other uncommon histologic variants was as follows: adenosquamous carcinoma, squamous carcinoma, hepatoid adenocarcinoma, carcinoma with lymphoid stroma, choriocarcinoma, parietal cell carcinoma, malignant rhabdoid tumor, mucoepidermoid carcinoma, paneth cell carcinoma, undifferentiated carcinoma, mixed adeno-neuroendocrine carcinoma, endodermal sinus tumor, embryonal carcinoma, pure gastric yolk sac tumor and oncocytic adenocarcinoma.

Primary gastric SCC represents a rare entity. Since the first report in 1905 by Rolleston and Trevor,⁷ more than 100 cases have been published. The incidence of this tumor is 0.04~0.07%.⁸ In western countries, the mean age of the patient is 61.9 years and male predominance has

been observed.^{9,10}

Parks¹¹ suggested three criteria for primary gastric SCC as follows: First, tumor should not be located in the cardia; Second, tumor should not be extended into the esophagus; Third, there must be no evidences of SCC in any other organs. Boswell and Helwig¹² suggested histological criteria for gastric SCC as follows: First, typical keratinizing cell masses with pearl formation; Second, a mosaic pattern of cell arrangement with sharp border; Third, intracellular bridge; Fourth, a high concentration of sulfhydryl or disulfide groups indicating the existence of keratin. According to their suggestion, at least one of these criteria should be met to be diagnosed with the gastric SCC.

In this case, the tumor was located from the antrum to upper body, but with absence of tumor in cardia and no tumor extension to the esophagus in abdominal CT and PET CT. In histological examination of biopsy specimen, moderate to well differentiated SCC was diagnosed. This case was confirmed with pure SCC because of no evidences of glandular dysplasia in histological finding from surgically resected specimen.

The pathogenesis of the gastric SCC remains obscure, but several theories have been suggested as follows: First, tumor growth in area of ectopic squamous cell nest¹²⁻¹⁴; Second, tumor growth in squamous metaplasia of glandular epithelium^{15,16}; Third, pre-existing adenocarcinoma that undergoes squamous differentiation^{8,17}; Fourth, tumor from toti-potential undifferentiated cell.¹⁸ In this case, the 3rd theory can be excluded because no evidence of adenocarcinoma was found out on the pathological result.

The post-operative adjuvant chemotherapy for stomach cancer is usually recommended. According to the recent study of Bang et al.¹⁹ adjuvant capecitabine plus oxaliplatin treatment after curative D2 gastrectomy can be considered as a treatment option for patients with operable gastric cancer. However, since this study was conducted on the basis of gastric adenocarcinoma, whether the recommendation can be applied equally to pure gastric SCC needs to be questioned. Behind this ambiguity, the combination therapy of capecitabine and oxaliplatin according to Bang et al.¹⁹ was carried out.

The prognosis of primary gastric SCC has not been

clearly revealed. It has been reported only in few cases, in which the patients died because of surgical complications or from multi-organ metastasis.¹⁰ If retrospective multi-center study and the investigations for this rare disease are carried out, more practical therapeutic options and information such as etiology, risk factor and accurate outcomes of this disease can be found out.

REFERENCES

1. Callery CD, Sanders MM, Pratt S, Turnbull AD. Squamous cell carcinoma of the stomach: a study of four patients with comments on histogenesis. *J Surg Oncol* 1985;29:166-172.
2. Lee NH, Joo YE, Park GS, et al. A case of primary pure squamous cell carcinoma of the stomach. *Korean J Gastrointest Endosc* 2005;31:102-106.
3. Lee JH, Yang KY, Kim BH, et al. A case of exophytic squamous cell carcinoma of the stomach. *Korean J Gastrointest Endosc* 2006;33:357-360.
4. Suh EH, Kim WH, Kim YI. Primary squamous cell and adenocarcinomas of the stomach: clinico-pathologic analysis of 6 cases. *Korean J Pathol* 1986;20:60-70.
5. Song IH, Choi J, Chun Y, et al. Primary squamous cell carcinoma of the stomach. A case report. *Korean J Med* 1997;53:835-839.
6. Hu B, El Hajj N, Sittler S, Lammert N, Barnes R, Meloni-Ehrig A. Gastric cancer: classification, histology and application of molecular pathology. *J Gastrointest Oncol* 2012;3:251-261.
7. Rolleston HD, Trevor RS. A case of columnar-celled carcinoma of the stomach showing squamous-celled metaplasia. *J Path Bact* 1905;10:418-422.
8. Mori M, Iwashita A, Enjoji M. Squamous cell carcinoma of the stomach: report of three cases. *Am J Gastroenterol* 1986;81:339-342.
9. Schmidt C, Schmid A, Lüttges JE, Kremer B, Henne-Bruns D. Primary squamous cell carcinoma of the stomach. Report of a case and review of literature. *Hepatogastroenterology* 2001; 48:1033-1036.
10. Muto M, Hasebe T, Muro K, et al. Primary squamous cell carcinoma of the stomach: a case report with a review of Japanese and Western literature. *Hepatogastroenterology* 1999;46:3015-3018.
11. Parks RE. Squamous neoplasms of the stomach. *Am J Roentgenol Radium Ther Nucl Med* 1967;101:447-449.
12. Boswell JT, Helwig EB. Squamous cell carcinoma and adenocarcinoma of the stomach. A clinicopathologic study. *Cancer* 1965;18:181-192.
13. Won OH, Farman J, Krishnan MN, Iyer SK, Vuletin JC. Squamous cell carcinoma of the stomach. *Am J Gastroenterol* 1978; 69:594-598.
14. Altshuler JH, Shaka JA. Squamous cell carcinoma of the stomach. Review of the literature and report of a case. *Cancer*

- 1966;19:831-838.
15. Volpe CM, Hameer HR, Masetti P, Pell M, Shaposhnikov YD, Doerr RJ. Squamous cell carcinoma of the stomach. *Am Surg* 1995;61:1076-1078.
 16. Vaughan WP, Straus FH 2nd, Paloyan D. Squamous carcinoma of the stomach after luetic linitis plastica. *Gastroenterology* 1977;72:945-948.
 17. Straus R, Heschel S, Fortmann DJ. Primary adenosquamous carcinoma of the stomach. A case report and review. *Cancer* 1969;24:985-995.
 18. Mingazzini PL, Barsotti P, Malchiodi Albedi F. Adenosquamous carcinoma of the stomach: histological, histochemical and ultrastructural observations. *Histopathology* 1983;7:433-443.
 19. Bang YJ, Kim YW, Yang HK, et al; CLASSIC trial investigators. Adjuvant capecitabine and oxaliplatin for gastric cancer after D2 gastrectomy (CLASSIC): a phase 3 open-label, randomised controlled trial. *Lancet* 2012;379:315-321.