Gastric Cancer with a Very High Serum CA 19-9 Level

Kazuya Kato a  Masahiko Taniguchi e  Takako Kawakami a
Atsushi Nagase b  Minoru Matsuda c  Kazuhiko Onode a d
Hidenori Yamaguchi a  Mineko Higuchi a
Hiroyuki Furukawa e

Department of Surgery, a Pippu Clinic, Pippu Town, Asahikawa Medical Center, Asahikawa, c Nihon University, Tokyo, e Hokuyu Hospital, Sapporo, and d Asahikawa Medical College, Asahikawa, Japan

Key Words
Gastric cancer · Adenocarcinoma · CA 19-9

Abstract
Carbohydrate antigen 19-9 (CA 19-9) is a sensitive marker for pancreatic and hepatobiliary malignancies. The highest frequency of elevated serum CA 19-9 levels is found among patients with pancreatic cancer. CA 19-9 has recently been demonstrated to be a marker of digestive tract malignancies. We report the case of a patient with a gastric cancer and a very high serum CA 19-9 level. During laparotomy, a large mass was found in the antrum. A distal gastrectomy with D2 dissection of the lymph nodes was performed. Histological examination, including immunohistochemistry, revealed an adenocarcinoma of the stomach producing CA 19-9. To the best of our knowledge, no patient with an extremely high serum CA 19-9 level resulting from a gastric adenocarcinoma has been reported previously.

Introduction
Carbohydrate antigen 19-9 (CA 19-9) has recently been developed of digestive tract malignancies. The CA 19-9 antibody has been obtained by immunizing mice with human colorectal cell line [1]. The tumor marker CA 19-9 is a sensitive marker for pancreatic and hepatobiliary malignacies [2]. The highest frequency of elevated serum CA 19-9 level is found in patients with pancreatic cancer. Occasionally reported in other primary neoplasms, it is most often associated with the gastrointestinal tract [3]. To the best of our knowledge, no patient with an extremely high serum CA 19-9 level resulting from a gastric adenocarcinoma has been reported previously.
Case Report

A 76-year-old man presented with right upper abdominal pain and loss of appetite. On admission, laboratory findings for white and red blood cells and platelet count were normal; the biochemical parameters were also within normal limits. The serum level of carcinoembryonic antigen was 3.3 ng/ml (cut-off 5.0 ng/ml), and the serum level of CA 19-9 was extremely high at 7,080 U/ml (cut-off 37 U/ml). Upper gastrointestinal barium study revealed a 7.0 cm filling defect in the antrum. Abdominal computed tomography scan showed a 5 × 6 cm tumor occupying the antrum and no liver metastasis. Gastroendoscopic examination revealed a large tumor on the antrum. Multiple biopsies showed moderately differentiated tubular adenocarcinoma of the stomach. During laparotomy, no ascites, evidence of enlargement, liver metastasis or peritoneal dissemination of the cancer was observed. The tumor was removed by sharp dissection and a distal gastrectomy with D2 lymph node dissection was performed (fig. 1). Pathological review of the resected specimen showed a poorly differentiated non-solid-type adenocarcinoma of the stomach with positive lymph node metastasis for all lymph nodes (21/21 lymph nodes) (fig. 2a). The resected specimen was evaluated as Borrmann type III, stage IIIB (pT3, pN2, pM0). Immunohistochemical study showed that CA 19-9-positive cells were present in the tumor (fig. 2b) and in the resected lymph nodes (fig. 2c, d). The patient was treated with 4 courses of systematic chemotherapy with CDDP and TS-1. The serum CA 19-9 level decreased to 4,070 ng/ml 2 months after surgery. Eight months later, ascites in the abdominal cavity was observed on an abdominal computed tomography image. The serum CA 19-9 level had increased to 120,000 ng/ml. The patient died from peritonitis carcinomatosa 8 months after the initial admission.

Discussion

CA 19-9 has been used in the diagnosis of digestive tract malignancies. The serum CA 19-9 concentration increases to the greatest extent in patients with pancreatic cancer or cholangiocarcinoma. CA 19-9 resembles carcinoembryonic antigen in colorectal carcinoma and various different gastrointestinal adenocarcinomas [2]. The expression of CA 19-9 has been studied in normal and malignant gastrointestinal tissues. The antigen was found by immunoperoxidase staining in 40–80% of carcinomas from the gallbladder, stomach, pancreas, and colon [3]. The association of elevated CA 19-9 levels with gastric carcinoma has been presented in a case report and in other studies. Elevated serum levels of CA 19-9 have been described in 15–30% of patients with gastric cancers, but these patients had multiple liver metastases. Elevated CA 19-9 levels have been significantly correlated with lymph node metastasis, vascular invasion and liver metastasis [4]. Our patient had an exceptionally elevated CA 19-9 level, with a serum level over 7,000 ng/ml, and a stomach cancer without liver metastasis or peritoneal dissemination as determined by laparotomy; at the time of death, the patient’s serum CA 19-9 was over 120,000 ng/ml. A high serum CA 19-9 level in a patient with gastric cancer is extremely rare [5].

Disclosure Statement

The authors declare no conflict of interest.
Fig. 1. Resected specimen, 6.0 × 5.0 cm in diameter.
**Fig. 2.** Photomicrographs of the stomach (hematoxylin and eosin stain). a Lower-power (original magnification ×100) view of the gastric cancer. b Immunohistochemical staining for CA 19-9 in the area of the adenocarcinoma (×100). c Photomicrograph of a resected lymph node (×40) showing metastasis of the gastric cancer. d Immunohistochemical staining for CA 19-9 in the lymph node of the adenocarcinoma patient (×40).

**References**


