

# SUCCESSFUL TREATMENT OF GASTRIC CANCER IN PREGNANCY

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## SUMMARY

**Objective:** Gastric cancer during pregnancy is rare, and even in Japan where a high rate of gastric cancers are reported, only 0.016% of pregnant women suffer from this disease. Generally, the cancer is already advanced at the time of detection and the prognosis for the woman is usually extremely poor. Moreover, prioritizing treatment of the woman often results in a premature birth.

**Case Report:** We report a case of gastric cancer in a 32-year-old pregnant woman, gravida 6, para 4. The mother and the neonate had good prognoses after early diagnosis, cesarean delivery and surgery.

**Conclusion:** Diagnosis of gastric cancer in pregnant women is often delayed even when they are symptomatic, because the symptoms are taken to be symptoms of hyperemesis or expansion of the uterus. However, since the nausea and vomiting arising from hyperemesis generally improves by the 20<sup>th</sup> week of gestation, the presence of protracted digestive symptoms in the second trimester calls for prompt investigation of digestive disorders. This case highlights the importance of early detection of gastric cancer for a positive prognosis, considering the rapidity with which gastric cancer advances in pregnancy. [*Taiwan J Obstet Gynecol* 2009;48(3):282–285]

**Key Words:** endoscopy, gastric cancer, *Helicobacter*, pregnancy

## Introduction

In Japan, the rate of gastric cancer during pregnancy is reported to be only 0.016% [1]. We report a case of gastric cancer in pregnancy in which good prognoses for the mother and the neonate were achieved after early detection, delivery and treatment.

## Case Report

A 32-year-old woman, gravida 6, para 4, presented in December 2003 in the 18<sup>th</sup> week of gestation. She was 158 cm tall and had a body mass index of 22.3 prior to pregnancy. Although there was no family history of gastric cancer, she smoked 10 cigarettes a day.

The woman had presented at the hospital complaining of epigastric pain, and was diagnosed with acute gastritis. Her symptoms abated with administration of an oral H<sub>2</sub>-blocker. From the 26<sup>th</sup> week of gestation, she began vomiting a brown-colored substance, with continuing gastric distress, and was admitted to hospital on day 0 of the 29<sup>th</sup> week of gestation for a comprehensive examination.

On admission, the woman looked pale and complained of an oppressive pain in the right upper quadrant. Her stool tested positive for occult blood, with a hemoglobin level of 10.0 g/dL, but no coagulation dysfunction was detected. Details of observations on admission are shown in Table 1. Tumor markers were as follows: carcinoembryonic antigen (CEA), 1.7 ng/mL; carbohydrate antigen (CA) 19-9, 8 U/mL; squamous cell carcinoma related antigen (SCC), 1.3 ng/mL; and neuron-specific enolase, 1.3 mg/mL.

Gastrointestinal endoscopy was performed on day 4 of the 29<sup>th</sup> week of pregnancy. An ulcer was detected in the lesser curvature of the stomach (Figure). Hemostasis by clipping and a biopsy were completed. The results revealed a moderately to poorly differentiated tubular adenocarcinoma with signet ring cells. The woman



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**Table 1.** Data on admission

Height (cm)	164
Weight (kg)	68
Heart rate (/min)	88
Blood pressure (mmHg)	136/77
White blood cell count (/mL)	19,700
Red blood cell count (/mL)	$337 \times 10^4$
Hemoglobin (g/dL)	10.0
MCV (fL)	89.0
MCH (pg)	29.7
MCHC (%)	33.4
Hematocrit (%)	29.9
Platelet count (/mL)	$39.7 \times 10^4$
Total bilirubin (mg/dL)	0.9
AST (IU/L)	21
ALT (IU/L)	6
Total protein (g/dL)	7
Amylase (IU/L)	96
Blood urea nitrogen (mg/dL)	13
Creatinine (mg/dL)	0.36
Sodium (mEq/L)	134
Potassium (mEq/L)	3.7
Chloride (mEq/L)	97
Calcium (mEq/L)	8.1
C-reactive protein (mg/dL)	0.6
PT (s)	11.3/10.4 (control)
APTT (s)	24.0/30.3 (control)

MCV = mean corpuscular volume; MCH = mean corpuscular hemoglobin; MCHC = mean corpuscular hemoglobin concentration; AST = aspartate aminotransferase; ALT = alanine aminotransferase; PT = prothrombin time; APTT = activated partial thromboplastin time.



**Figure.** Gastrointestinal endoscopy showing gastric cancer.

tested positive for *Helicobacter pylori*. Neither ultrasonography nor magnetic resonance imaging detected any metastases.

An elective cesarean section, pylorus gastrectomy, gallbladder removal, and lymph node dissection were

performed on day 6 of the 30<sup>th</sup> week of pregnancy. A Borrmann type III lesion arising from a 3.2 cm × 3.0 cm ulcer in the lesser curvature of the stomach was extracted. Pathologic examination showed a poorly differentiated adenocarcinoma, a non-solid carcinoma with signet-ring cells, and no regional lymph node metastasis. The woman was discharged from hospital on day 18 postoperatively without adjuvant chemotherapy being performed, and the case was followed up without recurrence for 3 years.

The baby was female, weighing 1,274 g upon delivery and had 1- and 5-minute Apgar scores of 8 and 10, respectively. The mother had been administered 16 mg of betamethasone for two consecutive days from day 0 of the 30<sup>th</sup> week of pregnancy, and 120 mg of surfactant was administered via tracheal intubation to the baby as she was suffering from Bomsel grade 1 respiratory distress syndrome. On the first day after birth, the baby suffered an apnea attack after extubation, and aminophylline was administered until the 33<sup>rd</sup> day after birth. She also showed symptoms of hyperbilirubinemia from the first day after birth and underwent phototherapy for 5 days. From the 38<sup>th</sup> day after birth, the baby received 0.66 mL/kg per day of ferric pyrophosphate syrup to treat the anemia. However, she showed no signs of retinopathy of prematurity or neurologic complications, and left hospital on the 75<sup>th</sup> day after birth, weighing 2,984 g. She subsequently continued to develop normally.

## Discussion

Gastric cancer in pregnant women is rare, with a frequency of 0.016% amongst Japanese women [1]. Several important reports in recent years (Table 2) have shown that the probability of the mother surviving remains low [1,4-7]. There is often a delay in diagnosing gastric cancer in pregnant women even when they are symptomatic, because the symptoms are often taken to be symptoms of hyperemesis or expansion of the uterus.

During pregnancy, the mother's immunity drops as a result of hormonal changes. According to a report by Lanciers et al [8], the *H. pylori* infection rate is significantly higher for pregnant women (26.6%) than non-pregnant women (11.0%) [8]. Furthermore, pregnancy decreases the secretion of acid in the stomach and increases mucus production. Added to this, because the histaminase produced by the placenta deactivates histamine function, the patient exhibits no deterioration of symptoms caused by the cancerous ulcer [9]. Given that circulatory blood flow also increases during pregnancy,

**Table 2.** Gastric cancer in pregnancy (literature review)

Case	Author	Age (yr)	Diagnosis	Pathology	Treatment	Metastasis	Maternal outcome
1	Jaspers et al [4]	28	Post delivery	Poorly differentiated adenocarcinoma	Postpartum gastrectomy	-	Death
2	Shimabukuro et al [7]	33	Post delivery	Poorly differentiated adenocarcinoma	Postpartum gastrectomy, immunotherapy	-	Survival
3	Nakagawa [1]	35	22 GA	Signet ring cell carcinoma	Total parenteral nutrition	Brain	Death
		33	7 GA	-	Chemotherapy	Pancreas	Death
		36	25 GA	-	Chemotherapy	Pancreas	Death
		31	37 GA	-	Chemotherapy	-	Death
		32	34 GA	-	Chemotherapy	Pancreas	Death
4	Ozdemir et al [5]	27	28 GA	Signet ring cell carcinoma	Postpartum gastrectomy, chemotherapy	-	Survival
5	Khatib et al [6]	26	26 GA	Poorly differentiated adenocarcinoma	Total parenteral nutrition	Liver	Death

GA = gestational age.

pregnant women are particularly susceptible to the rapid growth and spread of cancer.

In the 1930s, Smith [10] reported that the prognosis for pregnant women with gastric cancer tended to be good, as malignant tumor growth was curbed by pregnancy. However, because many young gastric cancer patients suffer from Borrmann type III or IV, their prognosis is widely regarded as poor, because they often have histologic cancer, undifferentiated glandular cancer, and/or signet-ring cell cancer [2]. Ueo et al [3] reported that the 3-year survival rate for pregnant women with gastric cancer was 21.1%. In the present case, the cancer was Borrmann type III and the fetal development was normal; we, therefore, prioritized the mother's survival and elected for a cesarean section. However, for cases in which the gastric cancer is at an early stage, it would usually be preferable to perform endoscopic surgery and continue the pregnancy for as long as possible.

Given that the nausea and vomiting arising from hyperemesis generally improves by the 16<sup>th</sup> week of gestation in 90% of cases and by the 20<sup>th</sup> week of gestation in 99% of cases [5], the presence of protracted digestive symptoms necessitates prompt assessment of digestive disorders in the second trimester. Prompt surgical and obstetric intervention should also be performed depending on the stage of pregnancy and the degree to which the cancer has advanced. Peptidase secretion changes during pregnancy; and because there is a lack of subjective symptoms pointing to gastric cancer, early stool and endogastric tests should be performed in such cases. In the evaluation of treatment and for the early detection of any recurrence, tumor markers are usually the means of determining whether a tumor is benign or malignant.

However, the impact of pregnancy on all the above factors must be taken into account, and indeed, no tumor marker elevation was observed in the present case. Pregnancy has almost no impact on CEA, CA 19-9 or sialyl Tn antigen levels; SCC and sialyl stage-specific embryonic antigen-1 are impacted slightly by pregnancy, but with a positive ratio of 10 to 20, there are almost no instances in which abnormally high levels occur.

Metastasis of a malignant tumor to the placenta or to the baby is extremely rare, and the literature contains only 67 such cases. Most common among these are malignant melanomas, which account for 23 of the 67 cases, and only two cases of metastasis of gastric cancer have been reported [6]. We have followed up this particular case of gastric cancer in pregnancy, both the mother and the neonate, for 3 years and have observed no recurrence or metastasis.

Thus, the possibility of gastric cancer should not be disregarded in the treatment of digestive symptoms in pregnancy. Considering the rapid growth of gastric cancer in pregnancy, early detection and intervention are imperative.

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