



Gastric Metastasis from Gastric-Type Mucinous Adenocarcinoma of Uterine Cervix: A Case Report

자궁경부 위형 점액샘암종의 위 전이: 증례 보고

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Gastric metastasis (GM) from cervical cancer is extremely rare, and only a few cases have been reported in the English literature. Gastric-type mucinous adenocarcinomas (GAS) of the uterine cervix are rare. GAS is an aggressive cancer commonly found in advanced stages; however, GM has not been reported. This study presents a rare case of GM from GAS of the uterine cervix in a 61-year-old female and describes the radiological findings of both the GM and cervical mucinous adenocarcinoma. GM appeared as a poor enhancing submucosal mass. The cervical mucinous adenocarcinoma appeared as an infiltrating mass with poor contrast enhancement. It exhibited mildly high and low signal intensities on the diffusion-weighted image and apparent diffusion coefficient map, respectively. This case is extremely rare and challenging to diagnose; however, if cervical cancer is an human papillomavirus-independent GAS type and a submucosal lesion is found in the stomach, the possibility of metastasis with a pattern similar to our case could be considered.

Index terms Neoplasm; Uterine Cervix; Stomach; Computed Tomography; Magnetic Resonance Imaging

INTRODUCTION

The stomach is an unusual site for metastasis, with an incidence rate of 0.2%–0.9% among patients with gastric tumors. Gastric metastases can arise from diverse origins, with melanoma being the most common. Other common origins include breast, lung, and esophageal cancers (1, 2). The uterine cervix is a very rare primary origin with only a few case reports (3-6). None of the reports have focused on the radiological findings of gastric metastasis from cervical cancer.

Gastric-type mucinous adenocarcinoma (GAS) of the uterine cervix is a rare subtype of mucinous endocervical adenocarcinoma, accounting for 1.5% of all cervical adenocarcinomas (7). To the best of our knowledge, there have been no previous reports of gastric metastases from GAS of the uterine cervix. Herein, we present a case of surgically confirmed GAS with gastric metastasis and describe the radiological findings.

CASE REPORT

A 61-year-old female (gravida 3, para 3) presented to the gynecology department with a complaint of vaginal bleeding persisting for 3 months. The mean age at menopause onset was 51 years. Physical examination revealed soft abdomen with no palpable masses. Serum cancer antigen (CA) 19-9 level was elevated at 10542.0 U/mL. Other laboratory findings including CA 125 and carcinoembryonic antigen, urine analysis, and complete blood count, were normal. A Pap smear revealed atypical glandular and endocervical cells. An endometrial curettage biopsy suggested endometrioid carcinoma with mucinous differentiation.

Initial contrast-enhanced pelvic MRI revealed a poorly enhanced mass involving the uterine cervix and body (Fig. 1A, B). The mass showed mildly high signal intensity on diffusion-weighted image and a low apparent diffusion coefficient map (Fig. 1C). Several oval shaped lymph nodes within 1 cm in size were noted along bilateral external iliac chain. They were considered as indeterminate nodes. Other findings include five ill-defined nodules at peritoneal cavity, suggesting peritoneal seeding nodules. Based on histological examination revealing endometrioid carcinoma, the patient was initially diagnosed as having endometrial cancer with cervical invasion. Additionally, we considered cervical cancer with uterine body invasion.

Hypodense wall thickening was observed in the gastric antrum (Fig. 1D) on contrast-enhanced abdominal CT at the time of diagnosis. Endoscopy revealed a smooth subepithelial lesion with ulceration (Fig. 1E). Because of the rarity of metastasis of uterine cervical cancer to the stomach and vice versa, we initially thought that the patient had double primary cancers of the uterus and stomach.

The patient underwent a total hysterectomy, bilateral salpingo-oophorectomy, pelvic and para-aortic lymph node dissection, and subtotal gastrectomy. The tumor in the uterine cervix had a pale yellowish solid appearance. Microscopy revealed that complex glands had invaded the cervical walls. The tumor cells had abundant eosinophilic cytoplasm and distinct borders. The tumor was negative for human papillomavirus (HPV) 28 by Anyplex real-time polymerase chain reaction. The submucosal masses of the gastric antrum showed morphology and immunoreactivity identical with those of the uterine mass (Fig. 1F). The final histological diagnosis was a gastric-type uterine cervical adenocarcinoma with gastric metastases. Lymph node metastasis was confirmed at pelvic, paraaortic and perigastric areas. Peritoneal seeding nodules were also removed and confirmed pathologically. The final International Federation of Gynecology and Obstetrics stage was IVB.

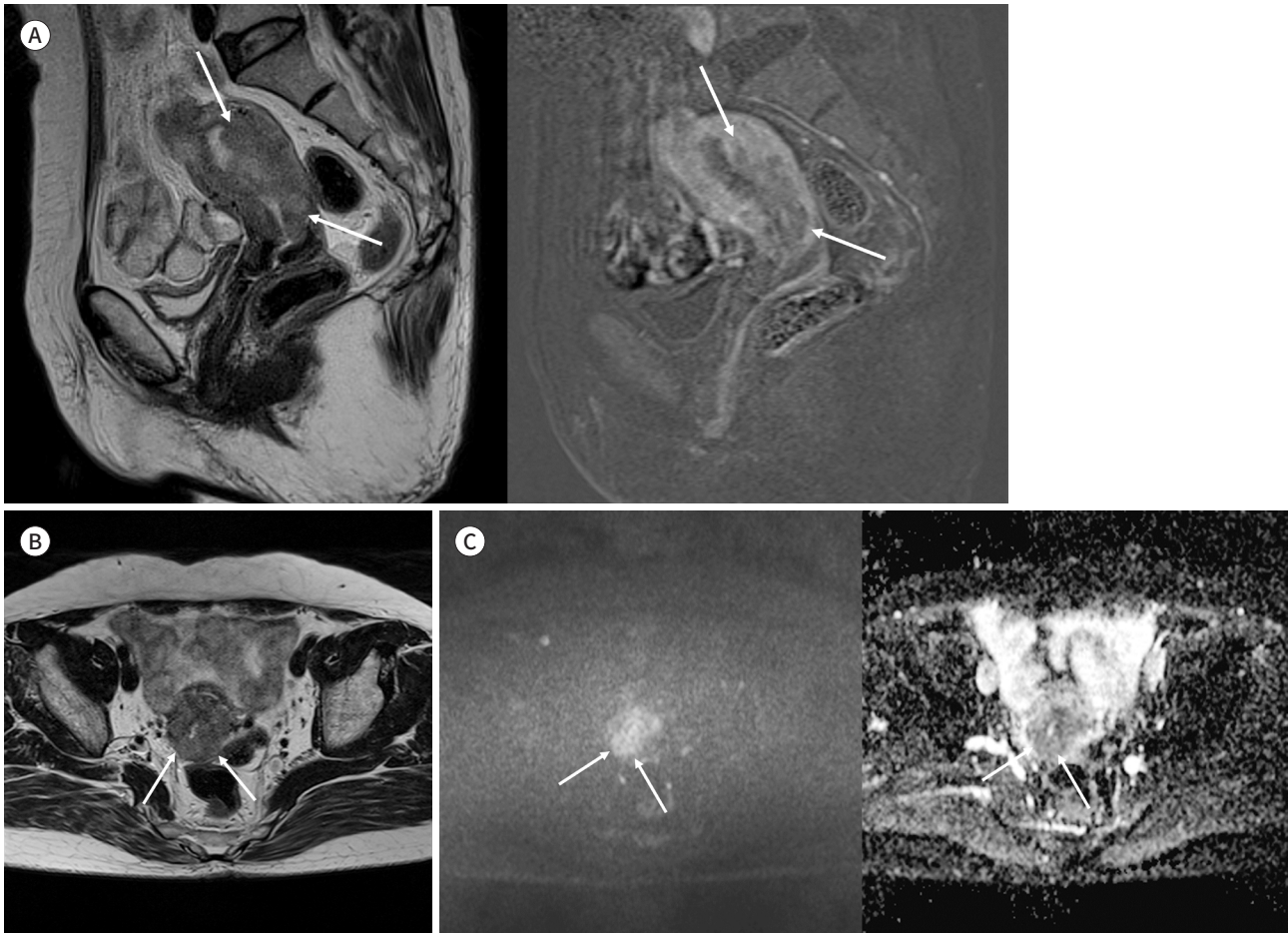
The patient underwent six cycles of adjuvant chemotherapy with paxel (paclitaxel)-cisplatin (cisplatin)-avastin (bevacizumab) for 12 months until small nodules were newly noted at small bowel mesentery and peritoneum on routine CT screening. Then, the line was switched to

Fig. 1. A 61-year-old female with gastric metastasis from gastric-type mucinous adenocarcinoma of the uterine cervix.

A. Sagittal T2-weighted (left) and sagittal contrast-enhanced T1-weighted (right) images show a poorly enhancing, ill-defined mass (arrows) in the uterine cervix and body.

B. Axial T2-weighted image of the uterine cervix shows an infiltrative mass (arrows) in the posterior portion of the uterine cervix, obliterating the cervical stromal ring.

C. The mass (arrows) demonstrates mildly high and low signal intensities on the axial diffusion-weighted image (left) and axial apparent diffusion coefficient map (right), respectively.



Keytruda (pembrolizumab) because of suspected peritoneal seeding.

This study was approved by the Institutional Review Board of our institution, which waived the requirement for informed consent (IRB No. 2023GR0389).

DISCUSSION

Stomach metastases are rare. According to previous literature, the incidence of stomach metastasis among gastric tumors ranges from 0.2%–0.9%. The most common sites of primary origin include the skin (melanoma), lungs, breasts, and esophagus (1, 2).

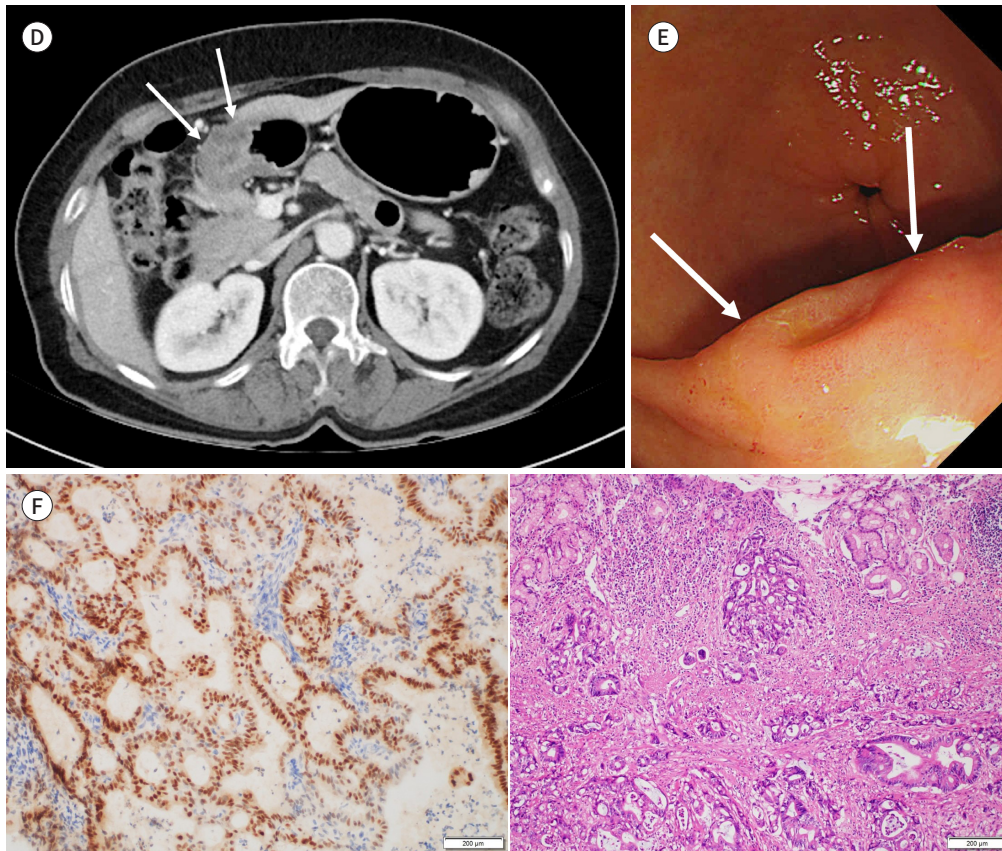
Most gastric metastases are hematogenous, whereas gastric metastases from esophageal cancer can spread via the submucosal longitudinal lymphatic network. In hematogenous metastases, tumor cells carried through the bloodstream appear to be trapped in the submu-

Fig. 1. A 61-year-old female with gastric metastasis from gastric-type mucinous adenocarcinoma of the uterine cervix.

D. Axial contrast-enhanced CT image shows focal hypodense wall thickening of the gastric antrum (arrows).

E. Endoscopy reveals a smooth subepithelial lesion with central ulceration (arrows) on the greater curvature of the gastric antrum.

F. The microscopic image with PAX8 immunostaining shows complex glands with tumor cells showing diffuse nuclear expression (left, $\times 200$). The microscopic image with hematoxylin and eosin staining shows glands with tumor cells identical to those in cervical cancer are observed in the gastric mucosa and submucosa (right, $\times 100$).



cosal layer, leading to the development of submucosal tumors. Another typical form is linitis plastica, which is commonly observed in breast cancer (2).

In previous reports, gastric metastases were often observed in the middle or upper thirds of the stomach (1, 2, 8). On CT, the gastric metastases frequently showed hypo-enhancement and “bull’s eye” or “target” appearance as they were submucosal lesions (2, 8). Diffuse infiltration is also associated with breast cancer (8). In this case, a poorly enhancing submucosal lesion was noted in the stomach antrum on contrast-enhanced CT.

The uterine cervix is a rare origin of gastric metastasis, with only a few case reports. All previous cases were squamous carcinomas, and one was an adenosquamous carcinoma. To the best of our knowledge, this is the first case report of gastric metastasis from GAS of the uterine cervix.

GAS is a rare subtype of mucinous adenocarcinoma of the uterine endocervix that shows a gastric morphology and immunotype. Its histological characteristics are defined as a majori-

ty of cells showing clear and/or pale eosinophilic and voluminous cytoplasm with distinct borders. It shows a gastric immunophenotype with positive reactivity to HIK 1083 and/or anti-MUC6 antibodies. Unlike the usual type of adenocarcinoma of the uterine cervix, it is not associated with HPV infection (9). In this case, the tumor contained cells with abundant eosinophilic cytoplasm and distinct borders. This is an HPV-independent type.

The tumor recurrence and survival outcomes of GAS are poor compared with those of the usual type of adenocarcinoma. At initial presentation, more than half of the patients were reported to have advanced-stage cancer (FIGO II-IV). At the time of initial surgery, 39% of patients had at least one site of metastasis. Metastatic sites include the lymph nodes, adnexa, omentum, bowel, and peritoneum (10). In our case, the patient was diagnosed with FIGO stage IV disease with multiple metastases to the stomach, lymph nodes, and peritoneum.

Previously reported radiological findings of GAS include infiltrative masses with or without cysts in the endocervix. Patients with GAS tend to show a higher prevalence of cysts, endocervical locations, vaginal involvement, and parametrial involvement (10). The MRI findings in our case included an infiltrative, poorly enhanced mass without a definite cystic lesion in the posterior portion of the uterine body and cervix. The mass disrupted the low-signal intensity cervical stromal ring, indicating parametric invasion.

Here, we present a rare case of gastric metastasis from a GAS of the uterine cervix. Our case revealed a poorly enhanced infiltrative mass without a cyst involving the uterine body and cervix on pelvic MRI. The cervical mass was confirmed as HPV-independent type of GAS. On abdominal CT, a hypodense lesion in the antrum of the stomach was submucosal lesion with intact mucosal lining. Histopathological examination and immunohistochemical stains revealed that the stomach lesion exhibited identical findings to those in the cervix. As a result, it was ultimately diagnosed as gastric metastasis from cervical GAS. To the best of our knowledge, this is the first case report describing the radiologic findings of GAS of the uterine cervix that had metastasized to the stomach. Because the proportion of GAS may increase because of HPV vaccination, awareness of such a pattern of metastasis is needed.

Author Contributions

Conceptualization, K.M.H., K.K.A.; data curation, K.M.H., K.K.A.; investigation, K.M.H., K.K.A.; writing—original draft, K.M.H., K.K.A.; and writing—review & editing, all authors.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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자궁경부 위형 점액샘암종의 위 전이: 증례 보고

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자궁 경부암의 위 전이는 매우 드물며, 소수의 증례만이 영문 문헌에서 보고되었다. 자궁경부 위형 점액샘암종은 드문 아형의 점액샘암종이다. 위형 점액샘암종은 진행성 암에서 발견되는 공격적인 암이지만, 위로의 전이는 보고된 바 없다. 저자들은 61세 여성의 자궁경부 위형 점액샘암종이 위 날문방에 전이된 증례를 보고하며 위 전이 및 자궁경부 점액샘암종의 영상의학적 소견을 서술하고자 한다. 위 전이는 조영증강이 잘되지 않는 점막 하 종괴로 보였다. 점액샘암종은 조영증강이 잘되지 않는 침윤성 종괴로 보였다. 확산강조영상에서는 경도의 고신호강도를 보였고 겔보기확산계수 지도에서는 낮은 값을 보였다. 이 사례는 매우 드물며 진단이 어렵지만, 자궁경부암의 유형이 사람유두종바이러스 비의존 위형 점액샘암종이며 동시에 위의 점막 하 병변이 발견된 경우, 우리 사례와 유사한 패턴의 전이 가능성을 고려할 수 있다.

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