

## CT and MRI Findings of Metastatic Uterine Carcinoma from Gastric Cancer : A Case Report<sup>1</sup>

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Uterine metastasis from stomach carcinoma occurred in a patient who five years previously had undergone gastrectomy for gastric adenocarcinoma. CT scans showed an ill-defined lobulated low density mass in the center of the uterus. T1-weighted MRI imaging showed that the lesion was indistinct from the myometrium; on T2-weighted imaging it showed increased signal intensity and had infiltrated the myometrium. After Gd-DTPA administration, the lesion showed very little enhancement.

**Index words :** Uterine neoplasms, MR  
Uterine neoplasms, CT  
Neoplasms, metastases  
Stomach, neoplasms

The female genital tract is not an exceptional place for metastasis from other extragenital neoplasms, the ovary being the most common location; metastasis from extragenital tumors to the uterus, however is very rare(1, 2). Despite numerous studies devoted to various aspects of metastasis to the uterus, only one report has, to our knowledge, described the radiologic findings of uterine metastasis from gastric carcinoma (3). We report the CT and MRI findings of metastatic adenocarcinoma of the uterus from gastric cancer.

### Case Report

A 62-year-old woman was admitted to our hospital because of indigestion and pain in the lower abdomen, lasting for several months. Five years previously she had undergone subtotal gastrectomy due to stage T3N0 M0 signet ring cell type adenocarcinoma of the stomach. She subsequently underwent ten cycles of chemotherapy with 5-fluorouracil, methotrexate, and folinic acid. Until nine months prior to admission she had been free of symptoms, and endoscopy and ab-

dominal CT had revealed no evidence of recurrent gastric cancer.

On admission, physical examination revealed a palpable mass in the lower pelvis, with mild tenderness and abdominal distension. Complete blood count showed a hemoglobin level of 9.7g/dL, hematocrit 30 %, and WBC 7000/mm<sup>3</sup>; Urinalysis and serum chemistry were within normal limits. Gastric endoscopy showed only gastritis, with no evidence of tumor recurrence. For further investigation of the cause of anemia and palpable mass in the pelvis, subsequent abdominal CT was performed. Contrast enhanced CT scan showed an approximately 4×5 cm sized, ill-defined, lobulated, inhomogeneous low attenuation mass in the uterus (Fig. 1). A small amount of loculated ascites with subtle peritoneal thickening and numerous micronodules on the mesentery were noted. On the basis of CT findings, two possibilities were considered. One was a tumorous condition such as endometrial carcinoma or uterine metastasis with peritoneal carcinomatosis; the other was an inflammatory condition such as tuberculous peritonitis associated with intrauterine abscess. To differentiate these, MRI using a 0.5 T unit (Gyroscon, Phillips, Netherlands) was performed. T1-weighted images showed only slit-like low-signal intensity fluid in the endometrial cavity, without discernible abnormal signal intensity; T2-weighted images showed

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that an irregular, ill-defined lesion was present in the myometrium and extended throughout the entire uterine corpus. The endometrium was paper thin and showed subtle irregularity, with focal obliteration of the junctional zone, indicating that the tumor involved the endometrium(Fig. 2A, B). On Gd-DTPA enhanced images, the lesion was poorly enhanced, showing lower signal intensity than that of enhanced normal myometrium. In addition, the endometrial involvement site of the tumor was poorly enhanced(Fig. 2C).

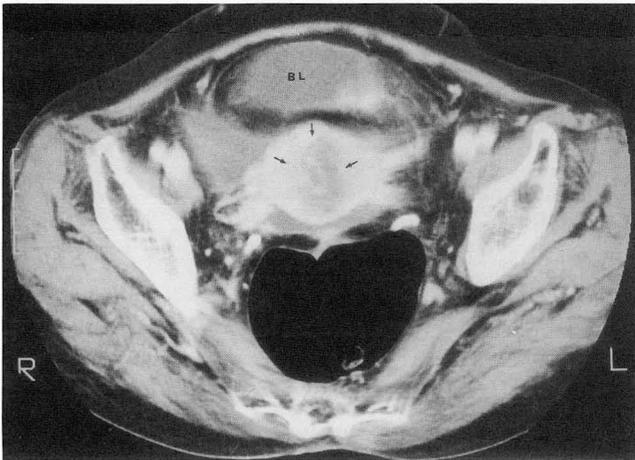
Pelvic examination showed that the uterus was fix-

ed and the pelvic floor was hard and rigid. Endometrial curettage was performed, and the histologic diagnosis was signet ring cell type adenocarcinoma of gastric origin.

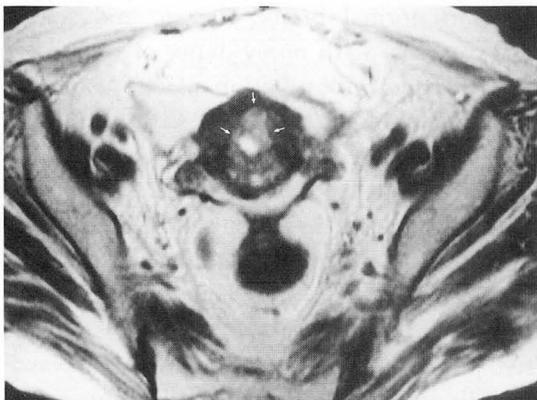
## Discussion

Metastasis to the uterus from an extrapelvic neoplasm is rare. The breast and colon are the two most frequent primary sites, while others are the stomach, pancreas, gall bladder, lung, skin, urinary bladder, and thyroid gland(2).

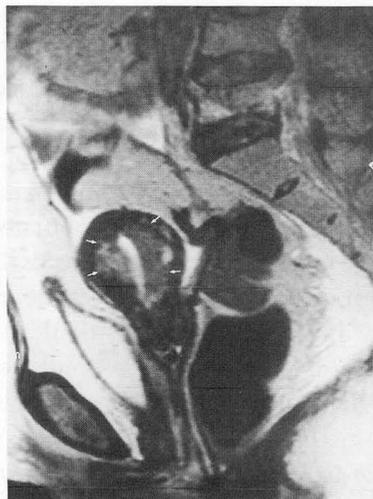
The anatomic distribution of a metastatic lesion within the uterine corpus varies and its mechanism remains unexplained. According to Weingold and Boltuch(4), uterine metastasis more frequently involved the endometrium than the myometrium; they suggested that this was due to their differing susceptibility to tumors. Kumar and Hart (2), however, reported that metastases almost always occurred in the myometrium and in about one-third of such cases, endometrial metastases were also present. They insisted that endometrial involvement alone was very rare, and believed that metastasis of an extrapelvic neoplasm to the uterus is hematogeneous. During hematogeneous spread, the uterine arteries follow a centropetal course and from the serosa to the endometrium, in almost all cases involving endometrial extension, myometrial involvement would therefore be expected. In our case, the endometrium and myometrium were simultaneously



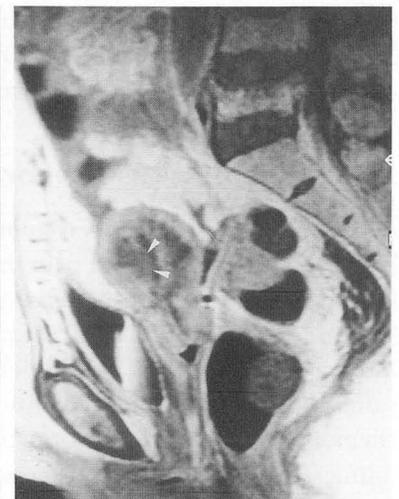
**Fig. 1.** Conventional contrast enhanced CT scan through pelvis shows an ill-defined hypoattenuation mass (black arrows) in the center of the uterus. Small amount of loculated fluid is noted around the uterus. BL=bladder.



**A**



**B**



**C**

**Fig. 2.** MRI findings of the uterine metastasis.

**A.** T2-weighted axial image (TR/TE = 2100/100) shows ill-defined increased signal intensity mass involving inner two-thirds of the myometrium(white arrows).

**B.** T2-weighted sagittal image demonstrates the extent of the myometrial infiltration of the tumor more clearly (white arrows) than axial image. Subtle endometrial irregularity and a focal obliteration of junctional zone were seen.

**C.** On Gd-DTPA enhanced axial image (TR/TE=550/10), the lesion is poorly enhanced and shows relative low signal intensity as compared with that of highly enhancing normal myometrium. Also the endometrial involvement site of the tumor is poorly enhanced(arrowheads).

**Table 1.** Characteristics of Uterine Metastases in Patients with Known Gastric Carcinomas

Imaging Findings		Kim et al.	Jung et al.
CT	Central low density in the uterus	+	+
	Peripheral calcifications in the uterine corpus	+	–
	Evidence of peritoneal carcinomatosis	–	+
MRI	Endometrium(tumor involvement)	diffusely thickened(+)	thinned(+)
	Junctional zone	destroyed	destroyed
	Myometrium	ill-defined high signal intensity throughout the entire myometrium and stippled dark signal intensity calcifications in peripheral portion of the uterine corpus on T2-weighted image	Irregular high signal intensity throughout the myometrium with some sparing in periphery of the uterine corpus on T2-weighted image
Tumoral enhancement		not performed	poor enhancement
Pathologic subtype		mucinous	signet ring cell
Patient age at detection		41 years old	65 years old

involved.

Kim et al (3) reported the radiologic findings of uterine metastasis from stomach cancer. Their CT findings showed that together with the hypoattenuated uterine mass, multiple dense calcifications were present in the peripheral zone of the myometrium. T2-weighted images showed that thickened endometrium with markedly increased signal intensity was present throughout the full thickness of the myometrium. Similarly, our case showed a poorly defined hypoattenuated uterine mass on CT; calcified deposits were not noted, however, probably because the cell type was different. With regard to the thickness of involved endometrium, our MRI findings differed from these of Kim et al.(3); this was probably because in each patient, hormonal influence varied. In our case, post Gd-DTPA T1-weighted imaging showed poor lesion enhancement. These different findings are summarized in Table 1.

CT scanning showed that although the uterine mass was in the center of the uterus, it was not clear whether it had originated from the endometrium or the myometrium. This ill-defined hypodense lesion in the uterus resembled the endometrial carcinoma or intrauterine abscess, typical of tuberculosis or actinomycosis; on CT scan alone, these could not be differentiated. Initially, the possibility of uterine metastasis was not suspected, despite knowledge of the patient's past history; gastrectomy for gastric cancer had been performed five years earlier, and there had been no evidence of tumor recurrence until nine months prior to admission.

MRI showed that the uterine mass mainly involved the myometrium. Subtle endometrial irregularity and focal obliteration of the junctional zone were seen, which suggested endometrial involvement, but signal intensity of the endometrial mass was not significant. These findings may help differentiate uterine metastasis from primary endometrial carcinoma or uterine abscess; because endometrial carcinoma is usually well enhanced, Gd-DTPA enhanced imaging may make this differential diagnosis easier (5).

In summary, we describe a case of uterine metastasis from gastric carcinoma, in which diagnosis was by CT and MRI; an ill-defined low attenuating uterine mass was seen on CT and a poorly-enhanced predominantly myometrial lesion in association with subtle endometrial involvement was seen on MRI.

## References

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## 위암으로부터 유발된 자궁전이암의 CT 및 MRI : 1예 보고<sup>1</sup>

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자궁은 난소 등 다른 산부인과적 장기와는 달리 전이 암이 매우 드물긴 하지만, 예외적인 장소는 아니다. 저자들은 위암으로 수술한 뒤 5년 후에 발생한 자궁 전이 암 1예를 보고한다. CT상 경계가 불분명한 저 음영의 종괴로 관찰되었고, MRI상에서는 T2강조 영상에서 주로 근육 층을 침범한, 경계가 불분명한 고 신호 강도의 병변으로 관찰되었다. Gd-DTPA조영증강 영상에서 병변은 조영증강이 거의 되지 않았다.