Abscopal Effect of Radiation on Toruliform Para-aortic Lymph Node Metastases of Advanced Uterine Cervical Carcinoma – A Case Report

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Abstract. *The case of a 69-year-old woman with advanced uterine cervical carcinoma with toruliform para-aortic lymph node metastases that showed an abscopal effect of radiation therapy (effect out of irradiated field) is reported. The patient was admitted to our University Hospital in March 2005, and treated with radiation therapy only for the primary pelvic lesions without chemotherapy because of her severe economic status. After the treatment, not only did the cervical tumor in the irradiated field disappear, but the toruliform para-aortic lymph node swelling outside the irradiated field also spontaneously disappeared. The patient is still alive and well without relapse. This case is the first clinical demonstration of an abscopal effect in advanced uterine cervical carcinoma.*

Case Report

A 69-year-old woman was referred to a hospital with continuous vaginal discharge and bleeding for 2 months. A pelvic examination was performed and a cervical tumor was found. Cervical cytology showed the presence of malignant cells (class V). The patient then visited our University Hospital for further examination and treatment in March 2005.

On pelvic examination, the size of the uterine cervix was that of an egg. No invasion was found into the vagina. The right parametrial invasion reached to the pelvic wall, although there was no left parametrial invasion. A biopsy of the cervical tumor was repeated at our University Hospital and a keratinizing type squamous cell carcinoma (SCC) was detected (Figure 1). The tumor was diagnozed as stage IIIb uterine cervical squamous cell carcinoma according to the FIGO classification, based on the criteria of clinical stages of the International Federation of Gynecology and Obstetrics classification (1).

The patient's laboratory data were normal except for elevated serum SCC antigen, which increased to 73.5 ng/ml (normal range: 0-1.5 ng/ml).

Computed tomography (CT) scanning of the abdomen and pelvis revealed a bulky cervical tumor and swelling of toruliform para-aortic lymph nodes (Figure 2 a-c). Magnetic resonance imaging (MRI) showed that the tumor was greater than 5 cm in size and the carcinoma extended onto the right pelvic wall (Figure 3 a, b).

Because of her economic status, the patient's therapeutic plan did not include chemotherapy but only external radiation therapy combined with intracavitary irradiation at an out-patient clinic. First, external irradiation would be performed over the whole pelvis. This would be followed by irradiation of the para-aortic lymph node region before the initiation of radiation therapy.

She was treated with a combination of external whole pelvis and intracavitary irradiation to the primary pelvic lesions. Whole pelvis irradiation was performed with anterior and posterior parallel-opposed ports with a dose of 1.8 Gy per fraction. However, her treatment ceased because she could not pay for daily treatment services after about 4 weeks (total dose, 28.8 Gy). At 41 days after the last treatment, irradiation funded by the Japanese government in June 2005 was resumed. External irradiation using central shielding was performed with a dose of 2 Gy per fraction, about five times per week for 3 weeks (total dose, 22 Gy). Concomitantly, intracavitary irradiation was initiated; it was performed for 4 weeks (once per week, 6 Gy per fraction, for a total dose of 24 Gy to point A).

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Key Words: Uterine cervical carcinoma, abscopal effect, para-aortic lymph node.

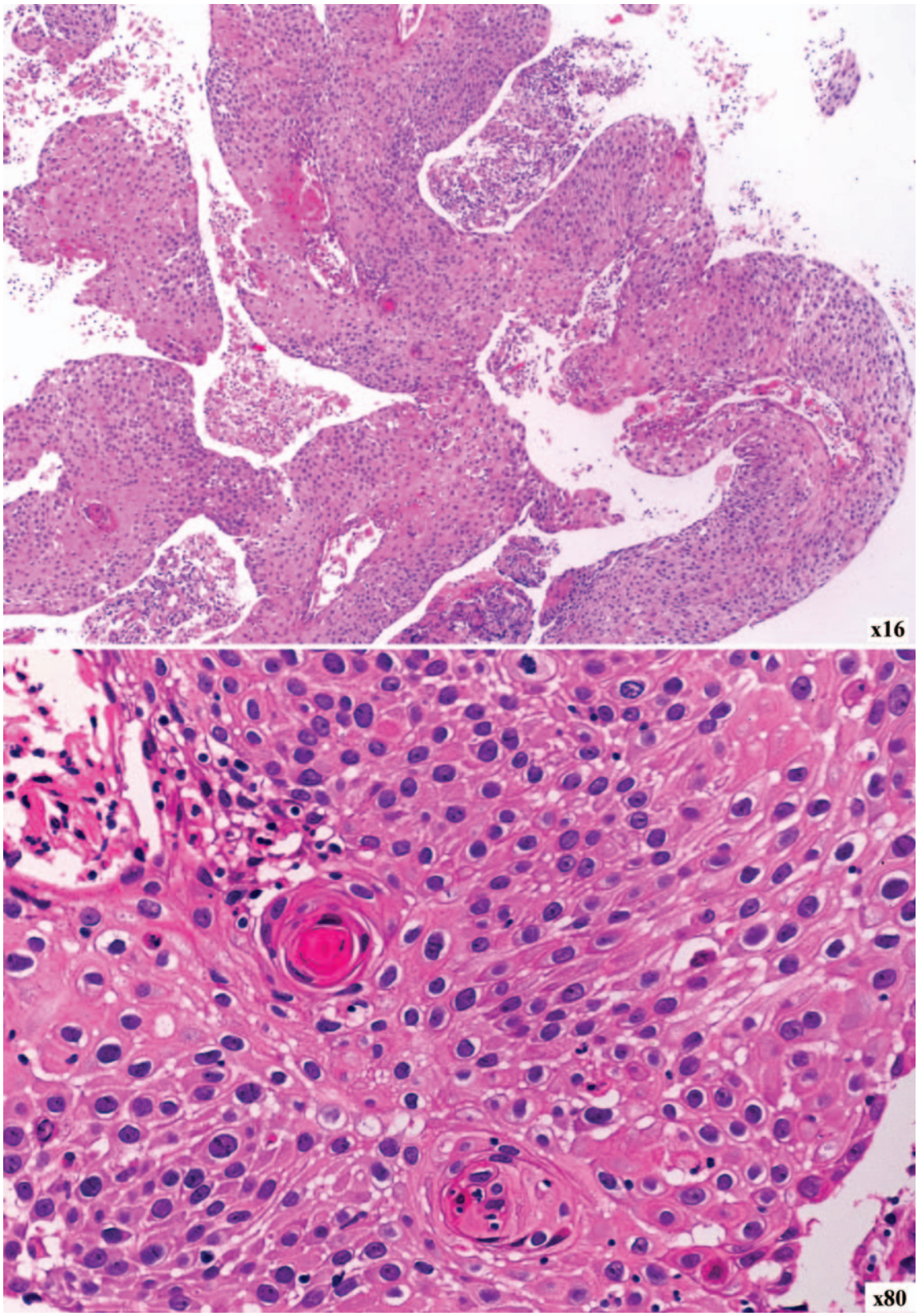

Figure 1. *Biopsy specimen stained using hematoxylin and eosin (x16, x80). Squamous cell carcinoma with keratinization was detected.*

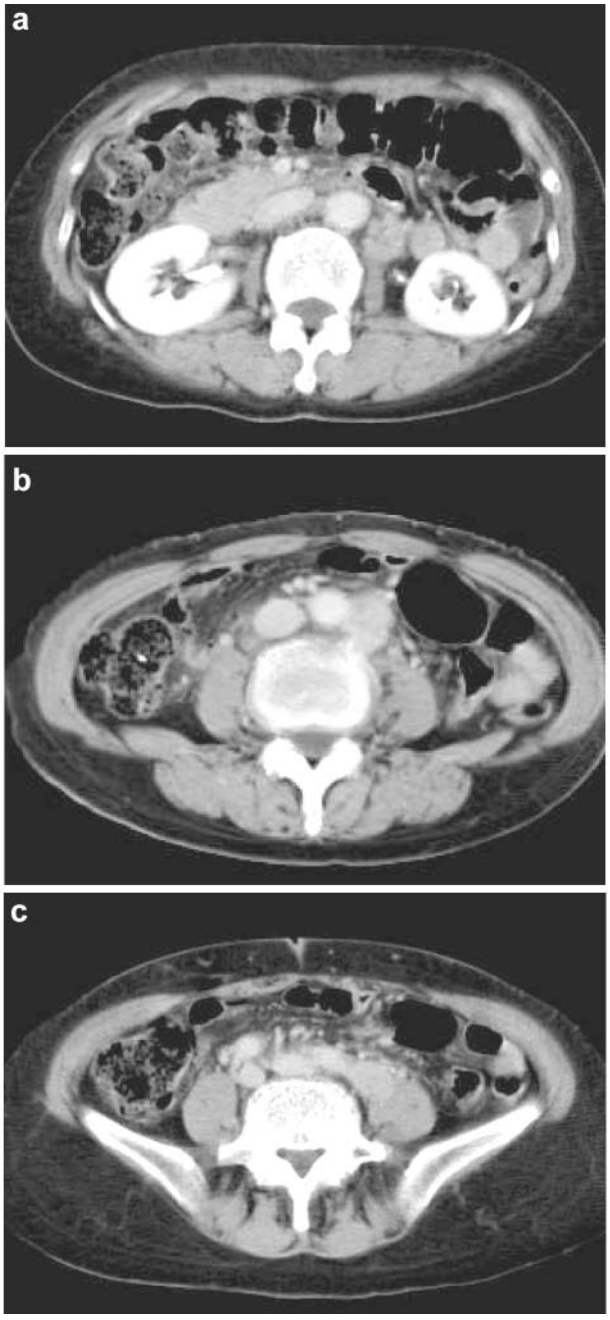

Figure 2. *Computed tomography of the abdomen before the initiation of radiation therapy. Toruliform lymph node metastases were detected in the para-aortic region.*

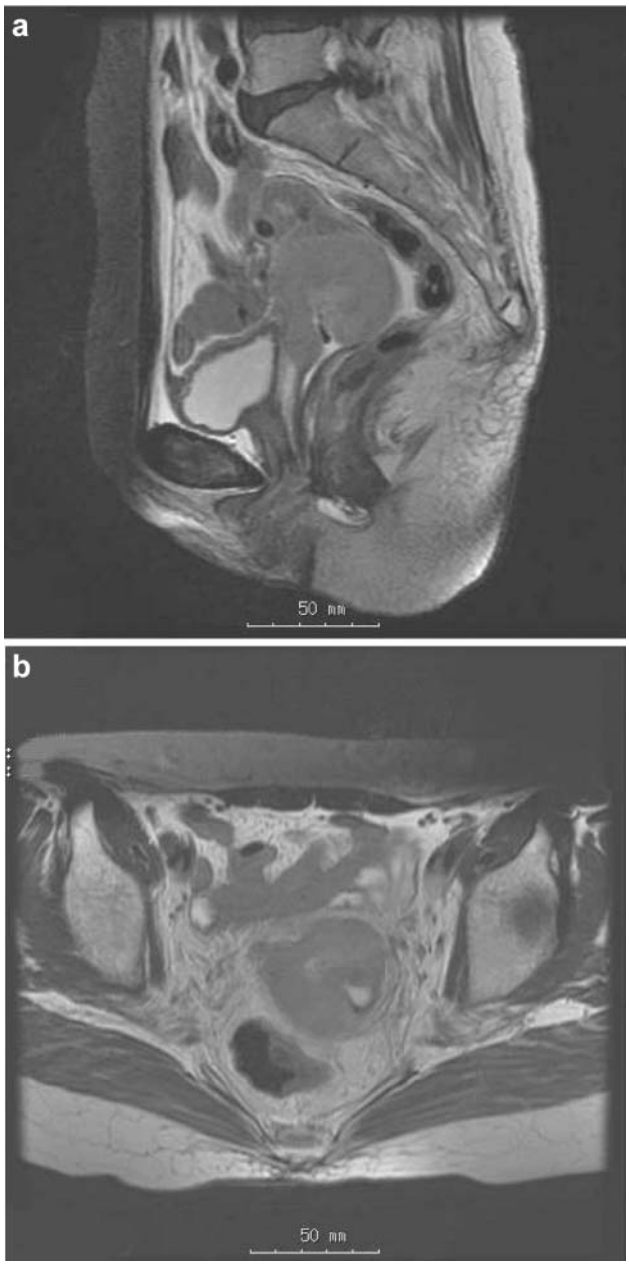

Figure 3. *Magnetic resonance imaging of the pelvis before the initiation of radiation therapy. A bulky cervical tumor was detected. This is a sagital image of T2WI (a). This is a axial image of T2WI (b).*

After this treatment, abdominal and pelvic CT and pelvic MRI were performed and showed that the cervical tumor had disappeared (Figure 4a, b). The serum level of SCC antigen had also decreased to within the normal range (0.6 ng/ml). Furthermore, surprisingly, the para-aortic lymph node swelling spontaneously disappeared, even in para-aortic lesions outside the irradiated field (Figure 5a-c). Neither irradiation of the para-aortic lymph nodes nor systemic chemotherapy was performed.

The serum SCC antigen level has remained under 0.5 ng/ml and the patient is still alive and well with no relapse.

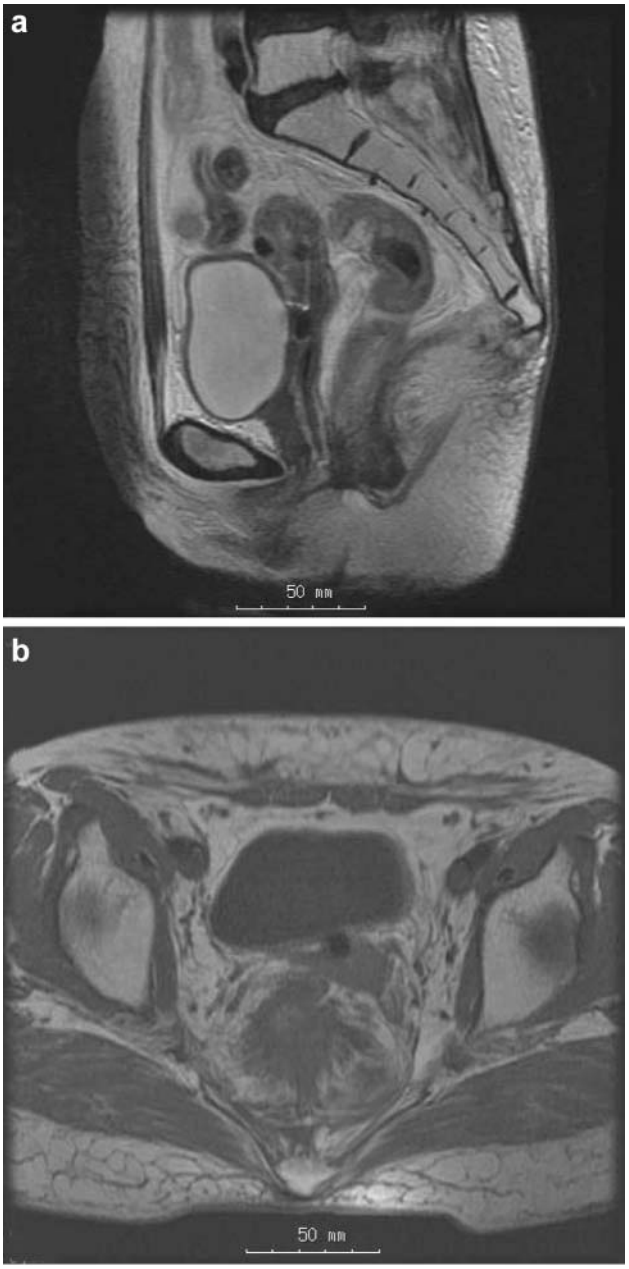

Figure 4. *Magnetic resonance imaging of the pelvis after the radiation therapy. Bulky cervical tumor had disappeared. This is a sagital image of T2WI (a). This is an axial image of T2WI (b).*

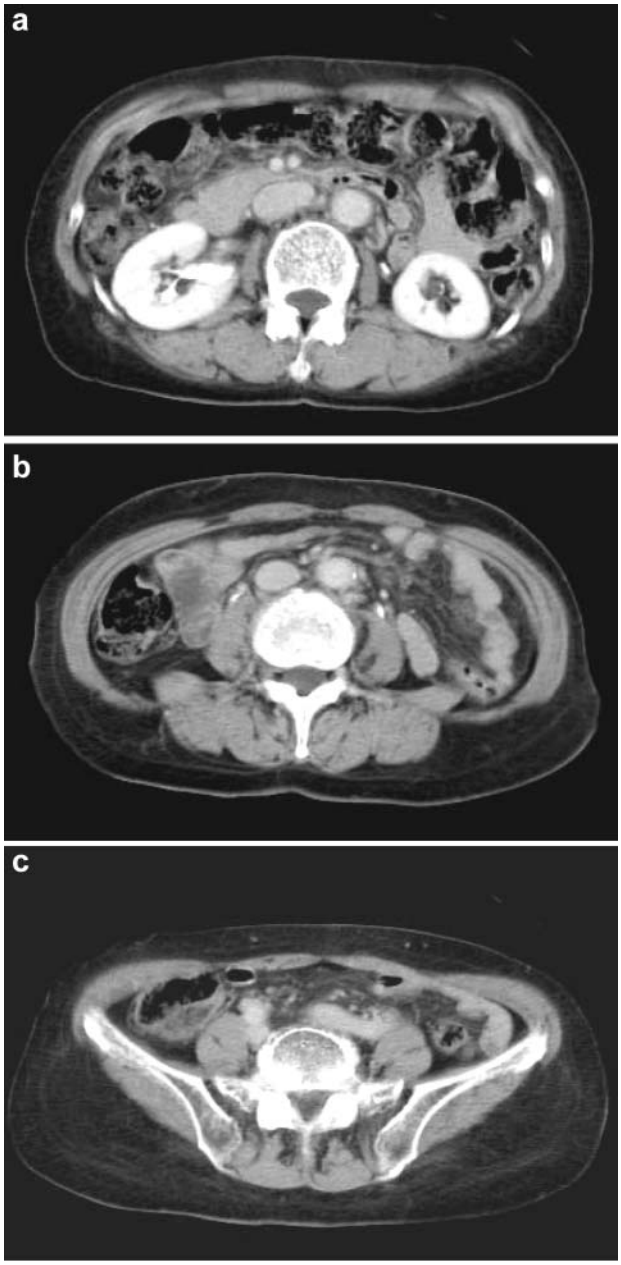

Figure 5. *Computed tomography of the abdomen after radiation therapy. Toruliform para-aortic lymph node metastases had disappeared.*

Discussion

The principle of radiation therapy treatment is that only the tumor inside the irradiated field is attacked. However, an abscopal effect, *i.e.,* a tumor outside the irradiated field is spontaneously reduced, appears to be an actual phenomenon.

A case of advanced uterine cervical carcinoma with toruliform para-aortic lymph node metastases treated with external whole pelvis and intracavitary irradiation to the primary pelvic lesion, in which the primary pelvic lesion disappeared, has been presented. Moreover in our case, para-aortic lymph node metastases outside the irradiated field also spontaneously disappeared. This phenomenon

indeed appears to be the abscopal effect. Since Mole (2) has first reported the abscopal effect in 1953, several cases have been reported regarding the abscopal effect in malignant lymphoma (3-5), hepatocellular carcinoma (6) and malignant melanoma (7). However, this is the first such case of the abscopal effect in uterine cervical carcinoma. Furthermore in this case, radiation was not performed according to the planned schedule because of the patient's economic status. Regardless of an interruption during external irradiation of 41 days, before any external irradiation to the para-aortic lymph nodes, para-aortic lymph node swelling spontaneously disappeared.

The mechanism of the abscopal effect has not been well defined. Ohba *et al.* (6) described that immunological mechanisms may play an important role in this rare phenomenon. Rees (5) described that the abscopal effect may be mediated through a common mechanism involving radiation damage to normal lymphocytes.

These mechanisms are supported by some studies. Patients with uterine cervical carcinoma with isolated para-aortic lymph node recurrence, treated with radiation therapy totaling 45-60 Gy, achieved 17-100% of 5-year survival (8-10). Regardless of inadequate dose irradiation to solid tumors, long-term survivors existed. This means that irradiation of less than 60 Gy is a sufficient treatment for para-aortic lymph node metastases in advanced uterine cervical carcinoma.

However, further studying of this rare phenomenon is required to demonstrate the mechanism of the abscopal effect.

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