



가

1

: 가 가 (Magnetic Resonance, MR)
 : 가 MR
 33 11,279cGy (: 5,352
 cGy, : 5,927 cGy) . MR (n=29) (n=4)
 . MR T1 , T2 .

: MR 94%(62/66),
 MR 39%(26/66) 가 ($p < .05$).
 2.6 × 1.9 × 2.2 cm, 1.7 × 1.3 × 1.4 cm ($p < .05$).
 5.1 , 3.1 ($p < .05$). T2
 74%(46/62), 15%(4/26) 가 ($p < .05$).
 : 가 가 MR

가 가 가 MR
 가 가 가
 (1-2). , FIGO stage IIb
 가 FIGO stage IIa
 (3). 1996 1 2000 12 가
 2sV , 가 MR 36
 , 가 3 33
 31 2
 41

(4-6).
 . FIGO stage Ib가 4 , IIa가 7 , IIb가 16 , IIIa가 6
 가 가 (7),
 (Magnetic Resonance, MR) 5 200cGy MR
 5,927cGy . 5,352cGy 7

14 : 가

MR . 29 11

MR 4

3 MR 가 p .05

MR 1.5T Signa Horizon Echospeed (GE Medical Systems, Milwaukee, U.S.A.)

T1

(repetition time, TR) 400 - 500msec,

(echo time, TE) 8 - 12 msec, (number of excitation, NEX) 2 , (matrix number) 512 × 256 . T2

(fast spin echo)

TR 3,500 - 5,000 msec, TE 80 - 120 msec, NEX 2 - 3 , 29

(echo train length) 12 , 256 × 192,

5 - 7 mm, 1 - 2 mm, (field of view) 24 × 24 cm

MR T1 , T2

가

T2

Paired T - test

가

가

MR (Table 1).

33 62 (94%) 가

가 4

26 (39%) (p < .05).

가 29

가 7 2 가, 11 1

(Fig. 1). 가

가 1 4

1 1 가 , 3 가

(Fig. 2).

Table 1. Change of Ovary Before and After Radiotherapy in Reproductive Women with Cervix Carcinoma in MR Imaging

	Before radiotherapy	After radiotherapy
Detection rate of ovary (%)	94	39
Size of ovary (cm)	2.6 × 1.9 × 2.2	1.7 × 1.3 × 1.4
Number of ovarian follicle	5.1 ± 0.7	3.1 ± 0.5
Differentiation of zonal anatomy (%)	74	15

2.6 × 1.9 × 2.2 cm

5.8 mL

1.7 × 1.3 × 1.4 cm 1.6

mL (p < .05) (Fig. 1).

5.1 3.1

(p < .05).

T2 62 49

가 . 13

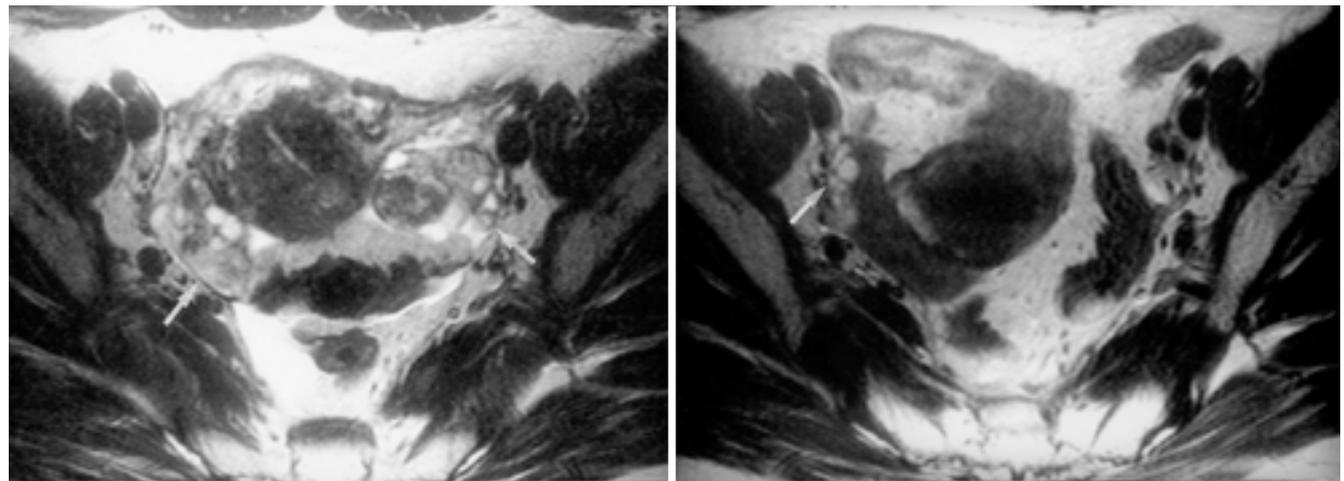
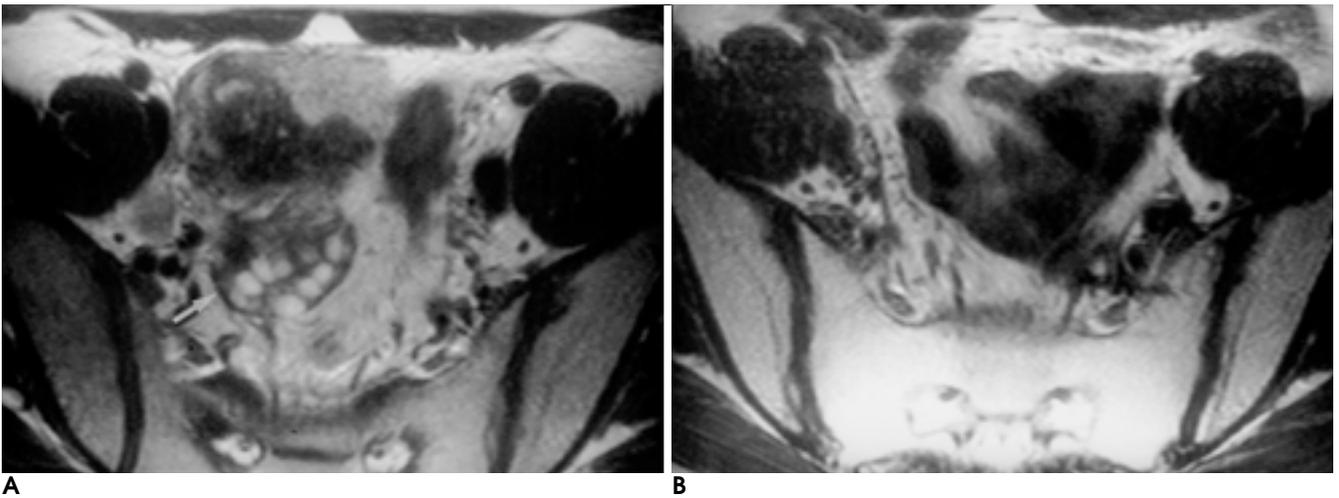


Fig. 1. 35-year-old female with cervix carcinoma

A. Axial T2-weighted fast spin echo (FSE) image (6,000/100[effective]) obtained at before radiotherapy shows bilateral normal ovaries (arrows). The medulla of the ovary has higher signal intensity than the ovarian cortex. Ovarian follicles have inhomogeneous high signal intensity with low signal intensity rim.

B. Axial T2-weighted FSE image (6,000/100[effective]) obtained after radiotherapy shows the right ovary (arrow) with diminished size and poor cortical-medullary differentiation compared with the axial T2-weighted FSE image obtained before radiotherapy.



A **B**
Fig. 2. 27-year-old female with cervix carcinoma
A. Axial T2-weighted fast spin echo (FSE) image (6,000/100[effective]) obtained before radiotherapy shows right ovary (arrow). Left ovary is not noted.
B. Axial T2-weighted FSE image (6,000/100[effective]) obtained after radiotherapy does not show ovary.

26 4 5 가
 22 가 가 가 가
 4 (74%) (15%) (8) MR 가 가
 (p < .05). T2 가 86%, 24%
 가
 (6).
 2sV (12, 13).
 가 가 가 가
 (6, 8 - 10). (14).
 79% 15% 가 Nicosia 가
 21 가 가
 가 MR 87%가 (11).
 47%가 MR 94%가
 가 가
 39% 가
 Blask (7) Wilms 가
 10 가
 가

가 MR
 가 가 .
 MR

1. 가 1996 1998
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Change of Ovary Before and After Radiotherapy in Reproductive Women with Cervix Carcinoma in MR Imaging¹

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Purpose: To investigate changes in the ovary revealed by MR imaging before and after radiotherapy in premenopausal patients with cervical carcinoma.

Materials and Methods: Thirty-three premenopausal patients with cervical carcinoma underwent radiation therapy at an average dosage of 11,279 (external: 5,352; internal: 5,927) cGy. Before and after this therapy, all underwent pelvic MR imaging using a 1.5T MR scanner (GE Medical Systems, Milwaukee, U.S.A.). The average interval of follow-up MR imaging was 7.2 months, and axial T1-weighted and axial and sagittal T2-weighted MR images were obtained. The presence, size number of follicles, and differentiation of the zonal anatomy of the ovary were determined by two radiologists, who reached a consensus.

Results: After radiation therapy, all patients ceased menstruation. For ovaries, the detection rates before and after radiation therapy were 94% (62/66) and 39% (26/66) ($p < 0.05$), respectively, and average ovary size was $2.6 \times 1.9 \times 2.2$ cm before and $1.7 \times 1.3 \times 1.4$ cm after therapy ($p < 0.05$). The average number of ovarian follicles before and after therapy was 5.1 and 3.1, respectively ($p < 0.05$). T2-weighted imaging, demonstrated differentiation of zonal anatomy in 74% of cases (46/62) before radiotherapy, and 15% (4/26) after ($p < 0.05$).

Conclusion: Our study has shown that after radiation therapy in premenopausal patients with cervical cancer, detection rates, average size, and the number of ovaries decreased, findings which are similar to those for normal postmenopausal ovary. MR imaging can reveal structural change in ovaries.

Index words : Ovary

Ovary, MR

Radiations, injurious effects

Radiations, injurious effects, complications of therapeutic radiology

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