

CLINICAL REPORT ON EXTERNAL IRRADIATION COMBINED WITH CALIFORNIUM-252 NEUTRON INTRALUMINAL BRACHYTHERAPY FOR CERVICAL CARCINOMA TREATMENT

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Aims and background: Neutron rays produce high linear energy transfer radiation, which has particular radiobiological characteristics. The aim of the study was to observe the curative effects and complications of external irradiation combined with californium-252 (²⁵²Cf) neutron intraluminal brachytherapy for treatment of cervical carcinoma.

Methods and study design: From December 2000 to December 2004, 128 cases of cervical carcinoma staged IIA to IIIB were treated with ²⁵²Cf neutron intraluminal brachytherapy using 8-10 Gy-eq per fraction, once a week. The total dose at reference point A was 36-40 Gy-eq in 4 to 5 fractions. From the second day after ²⁵²Cf neutron intraluminal brachytherapy, the whole pelvic cavity was treated with 6 MV X-ray external irradiation, applying 2 Gy per fraction 4 times per week. After 20-24 Gy of external irradiation, the center of the whole pelvic field was blocked with a 4-cm-wide lead shield; the total dose

of external irradiation was 44-50 Gy.

Results: The short-term curative effects were 95.3% complete remissions and 4.7% partial remissions. The 3-year and 5-year local control rates were 93.5% and 87.9%, respectively. The 3-year and 5-year survival rates were 87.5% and 70%, respectively. The rates of radiation complications were 4.7% for radiation cystitis, 7.8% for radiation proctitis, 6.3% for vaginal contracture and adhesion, and 5.5% for protracted radiation proctitis. The results of univariate and multivariate analysis indicated that differentiation of tumor cells and lymphatic metastasis are the main factors related to the clinical prognosis of cervical carcinoma.

Conclusions: A combination of external irradiation with ²⁵²Cf neutron intraluminal brachytherapy for treatment of cervical carcinoma can be well tolerated by patients. The rate of local tumor control is high and radiation complications are few.

Key words: brachytherapy, californium-252 neutron, cervical carcinoma, radiotherapy.