

Early-stage esophageal squamous cell carcinoma treated with californium-252 neutron brachytherapy: clinical report on 16 cases

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ABSTRACT

Aims and background. Californium-252 (²⁵²Cf) neutron brachytherapy is a form of high linear energy transfer radiotherapy, which has proven effective when used in combination with external beam radiotherapy to treat intracavitary cancers of the cervix, colon/rectum and esophagus. No study has been reported for treatment of intracavitary cancers with neutron brachytherapy alone. The aim of the study was to observe and analyze the long-term curative effects and complications for early stage thoracic esophageal cancer patients treated with neutron brachytherapy alone.

Methods. From December 2001 to August 2006, 16 patients of early stage squamous cell carcinoma underwent neutron brachytherapy. The total radiation dose to the reference point was 20-28 Gy-eq in 5 to 7 fractions with 4 Gy-eq/fraction. The 1-, 3-, and 5-year follow-up rates were 100%.

Results. The 2-, 3-, 4-, and 5-year survival rates were 100%, 87.5%, 87.5%, and 75%, respectively. The early complication rates for grades 1 and 2 radiation esophagitis were 75% and 25%, respectively. The late complication rates for grades 0 and 1 (according to the RTOG/EORTC standard) were 87.5% and 12.5%, respectively. Barium esophagography after treatments confirmed that the complete response rate was 100%. Fourteen patients were confirmed by endoscopy to have either normal mucosa or inflammation change.

Conclusions. Neutron brachytherapy alone was an effective and safe treatment for early stage esophageal squamous cell cancer.

Key words: early stage thoracic esophageal cancer, neutron brachytherapy, relative biological effectiveness.

Conflict of Interest: None.

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