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REVIEW ARTICLE

The potential role of brachytherapy in the irradiation of patients with lung cancer: a systematic review

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Abstract To review the use of brachytherapy as an adjuvant therapy to reduce recurrences after sublobar resections and as a palliation to patients with inoperable disease. A review of all published studies was performed to identify the recurrence rate after brachytherapy adjuvant to sublobar resection and assess the palliation of symptoms and the complications of brachytherapy as a palliative treatment. Most of the studies that we found about brachytherapy as an adjuvant therapy to sublobar resection due to patient's poor cardiopulmonary reserve showed that brachytherapy offered low recurrence rate with low toxicity. Ten studies concerning palliative brachytherapy showed improvement of symptoms with good tolerance and good endoscopic response rates. Literature suggests that brachytherapy for inoperable symptomatic disease can be delivered for symptom improvement with acceptable toxicity. Brachytherapy as an alternative treatment option for lung cancer needs more investigation with more prospective trials.

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Introduction

Lung cancer remains a major worldwide health problem and it is the leading cause of cancer mortality in both men and women. Smoking is the highest risk factor, along with second hand smoking, radon gas, asbestos, air pollution, chemical exposure. Non-Small Cell Lung Cancer (NSCLC) accounts for 85% while the rates of Small Cell Lung Cancer (SCLC) fall with the reduction in smoking rates. Lung cancer has propensity to disseminate early and has a high rate of relapse despite aggressive treatment with surgery, chemotherapy, radiation therapy or combination of these modalities [1].

In brachytherapy (BRT), radioactive sources are placed near or into the tumor for treatment. Brachytherapy has the advantage of delivering a high radiation dose to the tumor while sparing the surrounding normal tissues [2]. Especially for HDR-BRT (High Dose Rate Brachytherapy) which is commonly used [3]:

(a) Eliminates radiation exposure hazard for caregivers and personnel.
(b) Allows shorter treatment time. Therefore, it is possible to treat a larger number of patients and patient discomfort is decreased.
(c) Has less risk of applicator movement during therapy.
(d) Treatment planning and dosimetry are more accurate.

The purpose of this review is to assess the use of brachytherapy in lung cancer as an adjuvant treatment after a sublobar resection and as a palliative treatment to relieve

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