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Prospective Study of Hypofractionated Stereotactic Radiotherapy (HFRT) with Erlotinib for Brain Metastases

Ming Zeng [1]

1. Cancer Center, Sichuan Provincial People's Hospital

Corresponding author: Ming Zeng, miller2002@yahoo.com

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Abstract

Objectives: Patients with brain metastases from adenocarcinoma lung cancer have poor prognoses, and they are often excluded from clinical trials. Whole brain radiation therapy (WBRT) is considered as a standard of care. There were evidences of using HFRT technique to preserve CNS cognitive functions without compromising outcome. The purpose of this study is to evaluate the preliminary efficacy,tolerability and safety of the treatment of HFRT with erlotinib versus WBRT in non-small cell lung cancer (NSCLC) patients.

Methods: Biopsy proven exon 19 or 21 mutated at primary site of stage IV lung cancer patient with brain metastases, these subgroup patients with 4 and more or large brain metastases were randomized to receive HFRT (5 to 8 fx x 5 to 25 to 40 Gy) plus Erlotinib 150mg/day daily beginning on day 1 versus WBRT (2.5Gy x 15 to 37.5Gy). After RT, the erlotinib may be discontinued at investigator's discretion or continued. Changes in the irreversible grade 3 or any grade =4 neurotoxicity, local tumor control and adverse effects were investigated after treatment using approach.

Results: From March 2015 to December 2015, 26 cases of patients met eligibility criteria, of whom 54%(14/26) received HFRT plus Erlotinib and 46% (12/26) were treated with WBRT alone. Grade =3 neurotoxicity attributable to radiation therapy within 3 months time frame of WBRT was seen in 2 patients (16.67%) , including generalized weakness and radionecrosis. Immediately following the course of HFRT plus Erlotinib, Grade =3 neurotoxicity was observed in 1(7.14%) patients. The actuarial incidence of neurologic progression at 6 months was 21% and 10% in WBRT group and HFRT plus Erlotinib group, respectively.

Conclusions: We observed with short follow up (median follow up 6 months) a low rate of neurotoxicity, demonstrating that the HFRT plus erlotinib does not increase the incidence or severity of neurologic complications in NSCLC patients with 4 and more or large brain metastases. Because enrollment is ongoing, only neurological toxicity data report here.

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