

P3-203 NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6

Factors related to the incidence of CTCAE 3.0 Grade 2 or worse pulmonary fibrosis induced by neoadjuvant platinum-based chemotherapy and thoracic radiotherapy: A prospective study

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Purpose: To investigate, prospectively, clinical, physical parameters and changes in serum interleukin-1 α (IL-1 α), IL-1 β , IL-6, IL-7, tumor necrosis factor- α (TNF- α), transforming growth factor- β 1(TGF- β 1) and manganese superoxide dismutase (MnSOD) as indicators for CTCAE3.0 \geq Grade2 pulmonary fibrosis induced by neoadjuvant platinum-based chemotherapy and thoracic radiotherapy(TRT).

Methods: Between January and December 2004, 86 patients (66 with lung cancer, 10 esophageal cancer, 5 malignant thymoma, 5 mediastinum tumor) who received incidental thoracic irradiation and neoadjuvant platinum-based chemotherapy were enrolled in this prospective study. There were 9 females and 77 males (median age, 57 years; range, 19-74). The median follow-up was 96 days (range, 30-557). All patients received neoadjuvant platinum-based chemotherapy. Chemotherapy regimens included NP, NIP, EP, IEP and CAP. The medium pre-RT cycle was one (range, 1-6). Radiation dose ranged 30-66Gy. Cad-planTM v6.08 and Pinnacle^{3TM} v7.0 treatment planning system were applied to generate dosimetric metrics as following: mean lung dose(MLD), V₁₀ to V₆₀ in 10Gy increments. Serial serum concentration of IL-1 α , IL-1 β , IL-6, IL-7, TNF- α , TGF- β 1 and MnSOD were determined by enzyme-linked immunosorbent assay (ELISA) prior to and weekly during RT. Since great inter-patient divergence was revealed for baseline serum cytokines and MnSOD levels, we calculated week1/pre-RT ratios (w1/0 ratio, defined as serum concentration in the 1st week of RT/Pre-RT level) as surrogates. On univariate analysis, various dosimetric, serum cytokines, serum MnSOD, smoking history (<20 pack-year vs. \geq 20 pack-year) and clinical parameters (conventional RT vs. non-conventional RT, age) were studied. Hazard ratios(HRs) were estimated by Cox proportional hazard models for indicators to CTCAE3.0 Grade \geq 2 pulmonary fibrosis.

Results: Six of 86(7%) patients developed CTCAE3.0 Grade \geq 2 pulmonary fibrosis. Two developed Grade2 fibrosis (proportion of total lung volume that is fibrotic is 25-<50%), 2 Grade3 (50-<75%), 2 Grade4 (\geq 75% or honeycombing) and 0 Grade5 (death). On univariate analysis, no single parameter significantly correlated with severe pulmonary fibrosis. IL-7 w1/0 ratio approached marginal statistical significance (p=0.06). On multivariate analysis, baseline FEV1 (p=0.0352, HR 0.062) was significantly associated with \geq Grade2 pulmonary fibrosis. A trend towards significant correlation with fibrosis was observed for IL-1 β w1/0 ratio and TGF- β 1 w1/0 ratio, p=0.0716(HR 7.929) and p=0.0925(HR 2.561), respectively.

Conclusions: Baseline FEV1 seemed to significantly associate with CTCAE3.0 Grade \geq 2 pulmonary fibrosis in this group of patients. IL-1 β w1/0 ratio and TGF- β 1 w1/0 ratio were meanwhile marginally significant indicators. However, since only a few events were observed, care should be taken in interpreting the present findings.

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Results of hypofractionated radiotherapy (2 x 8 Gy) for patients with brain metastases from lung cancer

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Purpose: Brain metastases will develop in 25% of patients with lung cancer at some point in the course of their disease and radiotherapy is the mainstay of treatment for the palliation of brain metastases. The aim of this study is to evaluate the clinical and radiologic response rates, toxicity and tolerability of 2 x 8 Gy whole brain radiotherapy (WBRT) in lung cancer patients with brain metastases and to identify the prognostic factors for survival.

Materials and Methods: 2 x 8 Gy WBRT was performed in 126 lung cancer patients with brain metastases during 2002 and 2006 at the Radiation Oncology Department of Ege University Hospital.

Results: Twenty-three patients had small cell and 103 had nonsmall cell lung cancer. Pretreatment median Karnofsky performance score was 70 (range 20-90). In 62 patients (49.2%) the brain metastases were synchronous with the primary tumor. In metachronous metastases median time to metastases was 6 months (range 1-25 months). Median number of metastatic foci was 3 (range 1-8). Treatment was tolerated well. Clinical response rates were as follows: complete response 31%; good partial response 30.2%; partial response 21.4%; stable disease 7.9% and progressive disease 5.6%. Radiological response was evaluated in 54 patients and the response rates were as follows: complete response 7.4%; good partial response 5.6%; partial response 35.2%, stable disease 44.4% and progressive disease 7.4%. Median palliation and survival duration was 57 and 80 days respectively. Two and 6-month survival rates were 59.5% and 25.4% respectively. Performance status, age, hemoglobin level, metachronous metastases, localization, status of the primary tumor, response to steroid treatment, response rate, presence of other metastases, chemotherapy, serum lactate dehydrogenase level were identified as prognostic factors for survival. According to "Recursive Partitioning Analysis" 6 month-survival rates for Groups 1, 2 and 3 were 61.5%, 41.6% and 33.9% respectively (p=0.002). Reirradiation was performed in 11 patients within a median of 5 months (range 4-12 months).

Conclusion: Hypofractionated radiotherapy of 2 x 8 Gy provides similar palliation and survival rates when compared with other fractionation schedules and it is tolerable. The prognostic factors such as performance status, age, status of the primary tumor, response to steroid treatment, presence of other metastases, and serum lactate dehydrogenase level are also consistent with the literature. However the late morbidity of this schedule is unknown at the moment so its use could be restricted to patients with poor performance status with a short life expectancy.

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Long-term results of adjuvant radiotherapy in patients with resected non small cell lung cancer

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