AB013. Treatment of thymic oligometastastic or oligoprogressive lesions with hypofractionated radiation therapy or stereotactic body radiation therapy

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Background: Little is known about the effectiveness of hypofractionated radiation therapy (HFRT) or stereotactic body radiation therapy (SBRT) for the treatment of patients with oligometastatic (OM) or oligoprogressive (OP) thymic malignancies.
Methods: We retrospectively reviewed Stage IV patients with OM or OP thymic malignancies treated with HFRT or SBRT between 2009–2021. We defined OM as 5 or fewer sites of metastatic disease and OP as 5 or fewer sites of metastatic disease increasing in radiological size at the time of radiation. Analysis of local failure (LF, defined as failure within a treated lesion) and distant failure (DF, defined as failure outside the treated lesion) was done at the treatment course level using univariate analysis Fine-Gray regression adjusted for clustering. Analysis of overall survival (OS) and progression-free survival (PFS) was done at the patient level utilizing only the first course of treatment for each patient.
Results: Our analysis included 50 patients with 92 treatment courses. Patients had thymoma (50%), thymic carcinoma (TC, 40%), or atypical thymic carcinoid (ATC, 10%). The median biologic effective dose (BED) was 51 Gy (range, 38–106 Gy). With a median follow-up of 36 months, the median OS and PFS were 50 and 6.5 months, respectively. Patients with TC or ATC had significantly worse PFS than those with thymoma [hazard ratio (HR) 2.37; 95% confidence interval (CI): 1.18–4.76, P=0.013], but similar OS (P=0.55) and LF (P=0.729). Treated thymoma lesions had a lower hazard of DF than TC/ATC lesions, but this was not statistically significant (HR 0.59; 95% CI: 0.34–1.03, P=0.065). Lesions treated to a BED higher than 60 Gy had lower hazards of LF and DF, although this was not statistically significant (HR 0.29; 95% CI: 0.05–1.68, P=0.166 and HR 0.58; 95% CI: 0.3–1.1, P=0.096, respectively).
Conclusions: In our analysis, patients with TC or ATC had worse PFS than those with thymoma. Treated thymoma and TC/ATC lesions had similar hazards of LF, indicating similar radiation sensitivity in thymic lesions regardless of histology. There was a trend towards increased local control with higher BED regimens, but this did not reach statistical significance. Overall, our analysis points to the need for clinical trials on HFRT/SBRT for the treatment of these rare malignancies.
Keywords: Hypofractionated radiation therapy (HFRT); oligometastatic (OM); oligoprogressive (OP)

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://med.amegroups.com/article/view/10.21037/med-22-ab013/coif). AR reports grant support to institution from Varian Medical Systems, Astra Zeneca, Merck, Boehringer Ingelheim, and Pfizer; and he reports consulting fee from Astra Zeneca, Merck, Boehringer Ingelheim, and More Health; and he serves as unpaid Vice President of International Thymic Malignancy Interest Group, unpaid Board member of International Mesothelioma Interest Group, unpaid Track Chair of ASTRO Lung Cancer Track Chair, unpaid Committee Member of ASCO Lung Track Education Committee, and unpaid Vice Chair of ARS AUC Thoracic Committee. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are

appropriately investigated and resolved.

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