Editorial

Giving oligometastases the best shot using stereotactic body radiosurgery with image guidance. How far is the cat out of the bag?

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Oligometastatic disease is hypothesized to be a state of limited metastases in which frank widespread metastasis has not yet evolved. Milano et al. reported on patients with oligometastases undergoing two or more curative-intent stereotactic body radiation treatment (SBRT). In these selected patients, the 4-year overall survival and progression-free survival rates were 33% and 28%, respectively (1). Oligometastases should be limited in number and extent while amendable to targeted local therapies for ablation with potential cure. For example, liver resection of oncologic lesions can be associated with long-term survival in selected patients (2). High dose and focal external beam radiation in the form of SBRT may be an alternative to invasive procedures in dealing with certain sites of disease.

In this issue of Journal of GI Oncology, Perkins and colleagues focused on the treatment of oligometastases in patients with abdomino-pelvic recurrence or inoperable diseases. As the authors rightfully pointed out, these patients often have received heavy prior treatment of surgery, local radiotherapy, and chemotherapy, which precludes standard local treatment for the oligometastases (3).

Perkins et al. review the application of SBRT and early gastrointestinal (GI) toxicities and radiographic responses based on computed tomography (CT) and positron emission tomography (PET). In this cohort of patients, a median SBRT dose of 18 Gy was used. Majority or 87% of patients received single-fraction SBRT, and authors reported a local control rate of 74% with a metabolic response rate of 85%. Of interest, 13% of sites showed a transient increase in the uptake of SUV which subsided in follow-up PET scanning, indicating a potential "flare" response to the SBRT (4). In addition to the encouraging results, the rates of early toxicity profiles at 1 month post-SBRT were limited to grade 1 and grade 2 effects at 61% combining both upper and lower GI sites. A Radiation Therapy Oncology Group (RTOG) – sponsored phase I trial of dose escalation of study of liver metastasis reached the dose level "IV" of 50 Gy given over 10 fractions, and the protocol was closed for accrual (5). The median dose of 18 Gy as reported here by Perkins et al. is biologically less intense, and there is potential for dose study for these GI sites in the future.

This report of initial experience is limited to its retrospective nature and short follow-up. A minor portion of all sites, 13%, were treated in a fractionated fashion with the number of fractions limiting to 2 to 3 fractions. The rates of response and toxicity reporting may be affected in such a small cohort of patients. Image guidance was used in 78% of sites with placement of fiducials without significant adverse events according to the authors. Using PET scanning in pre- and post-treatment evaluation may add another dimension in gauging treatment response although the PET data were available only in 39% of the treated sites. The significance and meaning of SUV in PET imaging may be affected by the high dose nature of SBRT on tumor and surrounding normal tissues. In reference to experience of SBRT in lungs, post-treatment PET may have persistent and moderate SUV elevation for 1 to 2 years (6,7). Therefore, interpretation of PET information in SBRT in GI sites will require further study and follow up.

This report adds as building blocks for technical and clinical feasibility of targeted radiotherapy for these difficult-to-treat cases. Studies will be needed to identify patients with oligometastases who will benefit the most from targeted treatment. In the mean time, radiation oncologists will continue to fine tune techniques of delivering precise radiotherapy with cancer-controlling dose with great

No financial conflict.

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protection of normal organs. In a dosimetric study by MacDonald et al, proton beam-based targeted treatment produced comparable planning target volume dose with generally less dose to normal tissues than three-dimensional photon-based SBRT in lung cancer patients. The authors qualified that the clinical significance of their study remained to be determined (8).

In patients with metastatic diseases, we often consider "the cat to be out of the bag." With continuous progress in systemic treatments such as chemotherapy and biologics along with advancement in radiation techniques, it is hopeful that oncologists can differentiate subsets of patients with metastatic diseases and be able to restrain or even recapture the cat using multi-modality approaches.

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