

## Stereotactic Body Radiotherapy (Sbrt) for Oligometastases

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Cancer range between disease that remains local throughout its course and disease that is already systemic at the time of diagnoses (spectrum hypothesis) [1]. Successful metastatization is a complex interation between the tumor cells, tumor microenvironment, and host. For a tumor cell to acquire the ability to colonize a distant organ, genetic and epigenetic changes in expression are required [2]. Oligometastases indicates that the numbers and sites of metastatic tumors are limited [3] and local therapies are often conducted with a potentially curative aim in the clinical setting [4]. Oligo-recurrence is defined as distant metachronous metastases that can be treated by local therapy under conditions of a controlled primary lesion [5]. The criteria to consider a patient as oligometastatic are: 1) controlled primary tumor; 2) the size of the tumor is less than 5 cm; and 3) the number of metastases is less than five [6]. The incidence has not been well studied, but data suggest that limited metastatic spread is common, especially among certain tumor types (sarcomas, colorectal cancer and breast). Improved and more-specific imaging (Positron Emission Tomography) is likely to change the identification of oligometastases, with limited metastases recognized in increasing frequency [2]. The standard therapy for metastatic disease for most cancers is systemic therapy, including chemotherapy, hormonal therapy and targeted therapy [6]. Surgical removal of metastases has good outcomes in various settings, including liver and lung metastases [1]. The role of radiotherapy in the management of metastatic disease has been mainly limited to palliation, but we now have an opportunity to challenge this idea [1]. SBRT has recently come to the forefront in treating oligometastatic disease [7]. The primary goal of SBRT is to achieve local control of oligometastases and that would translate into clinical or survival benefit of patients [7]. SBRT treatment of limited metastases has shown promising local control rates for treated metastases, ranging from 67% to 95%. Two to three years survival rates have been reported in the range of 30% to 64% [2]. SBRT can be used in a palliative setting whether the index lesions to be treated are responsible for the symptoms to be palliated [6]. Factors

contributing to tumor control are: direct cell kill within the high-dose region, vascular and stromal effects. Demaria et al. [8] demonstrating T-cell-dependent antitumoral effects to tumors outside the treatment field after hypofractionated radiation and it resulted in a reduction in primary tumor and an abscopal effect on distant metastases. Many of the reported experiences are retrospective; prospective trials have been initiated but there are not randomized trials to examine the value of locally ablative therapies in the context of limited metastases [2]. Factors favorably affecting local control, progression-free survival, and overall survival are: breast cancer histology ; time to recurrence of more than 12 months; location of metastases confined to bone or thoracic lymph-node; three or fewer metastases; lesions smaller than 3 cm; higher doses and more hypofractionates schedules [1].

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