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INTERVIEW

SBRT for Colorectal Metastases: Is There a Role?

An Interview With Laura Dawson, MD

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At the SIR Annual Scientific Meeting in 2025, *Vascular Disease Management* spoke with Laura Dawson, MD, professor and chair of the Department of Radiation Oncology at the University of Toronto, and practicing radiation oncologist at the Princess Margaret Cancer Centre/ University Health Network about the latest literature on stereotactic body radiotherapy (SBRT) for the treatment of colorectal liver metastases, its real-world clinical applications, the advantages it offers over alternative therapies, and the advancements shaping the field.

What is the consensus on SBRT for colorectal cancer liver metastases in the current literature, and is this consistent with what you are seeing in practice?

Great question. Colorectal cancer liver metastases represent a relatively unique presentation of metastatic cancer, in that local treatment of metastases can improve survival and offer cure; that being said, systemic therapies are recommended treatment for metastatic cancer, and systemic therapy improves survival. Thus, in most situations, both systemic therapy and local therapy are recommended. Personalized decision making with input from the multidisciplinary team are crucial in this situation.

SBRT is one of several local therapies that may be used with the goal of ablating all the liver metastases, aiming for a total ablation of metastases, usually delivered in 1 to 5 treatment fractions. In terms of consensus and guidelines, they are slightly different all over the world. All of the guidelines recognize surgery and thermal ablation as being standard of care. Most also recognize SBRT as a standard of care alternative for unresectable liver metastases, particularly for tumors not well suited for thermal ablation. Most guidelines do not specify the details of exact situations that may be better suited for SBRT vs ablation.

Is SBRT used as much as should be? Probably not. There's a strong recognition that all patients with colorectal cancer liver metastases should be assessed for surgery and local therapies, including thermal ablation or SBRT. The most important message is if someone has liver-confined metastases and are told they're not a candidate for surgery, it's worth asking the question can the metastases be treated with other local therapies.

In reality, most of the time, we work together. Most patients have surgery if they're resectable and will have thermal ablation if the tumors are well suited for thermal ablation (if they are relatively small and accessible). Patients with cancers that are not well suited for thermal ablation or with tumors that recur despite ablation should be referred for an SBRT opinion. Ideally for SBRT, the metastases are less than 6 cm, focally distributed, allowing enough functional liver to be spared from radiation therapy. Some centers may have stronger interventional radiology expertise, and some may have stronger radiation oncology expertise, which can influence who is treated with which modality. That's not ideal, but there is center-to-center variability.

What advantages does SBRT offer over other therapeutic options for patients with colorectal liver metastases?

Great question. Ionizing radiation is used in about 50% of cancer patients, so it's a bread-and-butter treatment, and it is used on its own as a definitive therapy or for organ-preserving therapy, with surgery, as adjuvant or neoadjuvant therapy to reduce the chance of cancer coming back or for palliation. The advantage is that for more than 100 years it's been used as a cancer treatment, and it is a

robust treatment modality that kills cancer in a non-invasive way. When SBRT was starting to be used to treat patients with liver metastases, there was often a collaboration with interventional radiologists who placed radio-opaque fiducial markers to help guide the radiation treatment. Now, there's advances in hardware and software, and the imaging at the SBRT treatment unit is so good, there's less need for fiducial markers; in my own program we have not used fiducial markers for more than 20 years. So, SBRT is a truly non-invasive therapy.

It is now possible to obtain cone-beam CT imaging at the linear accelerators in 6 seconds with treatment delivery in a few minutes. We will continue to have more efficient automated treatment. Most of the time treating liver metastases, SBRT is delivered in 3 to 5 fractions, but there are some lesions that are well suited for 1 fraction – ideal from a patient perspective, with no bleeding or infection risk.

For SBRT, there are not the same anatomical barriers that there are for other treatments like surgery or ablation. For example, the vessels and biliary structures are very tolerant of radiation. If there is a tumor that's encasing or impinging a vessel or at the porta, that is a challenging location for surgery and/or traditional thermal ablative treatments, SBRT is a preferred therapy. SBRT is complementary to thermal treatment regarding which tumors would be most well suited for thermal ablation vs SBRT. Each local therapy works best in slightly different settings.

In a past interview, you pointed out that SBRT should complement rather than replace other local therapies. Is this still the case, or are there clinical scenarios in which you anticipate SBRT would be the sole treatment?

SBRT sometimes is the sole treatment if the liver metastases are not well suited for thermal ablation. So yes, I think that comment holds. What is a common scenario (at least for my team) is that a patient may have multiple liver metastases and some of the liver metastases may be well suited for thermal ablation and another may be better suited for SBRT; in this situation we treat the patient as a team, using both modalities. There is higher level evidence for thermal ablation for small metastases, 3 centimeters or less, and ablation is generally preferred for such metastases. For the larger tumor, recurrences following ablation and for metastases that are not likely to be fully ablated, that's where SBRT is preferred. It's not a competition.

Can you share any ongoing research or trials on this subject that interventional oncologists should be aware of?

There's ongoing randomized trials in the radiation oncology community that mostly have pooled different cancers; for example, there's a trial for systemic therapy plus or minus local therapies for patients with up to 10 oligometastases that may be within the liver or outside of the. There's another Canadian trial that is comparing 1 fraction vs 3 or 5 fractions. I am not aware of a SBRT trial for colorectal metastases. Decades ago, there were some attempts to have clinical trials using radiotherapy but they didn't accrue well. It's a lot tougher to complete clinical trials of local therapies compared to systemic therapies. There are some great trials that have been led by interventional radiologists in the past, so it is possible with effort. Hopefully we can conduct some interesting trials together in the future, to further improve patients outcomes. ■