Melanoma’s Radioresistant Reputation Challenged

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Conventional wisdom would have one believe that melanoma is a highly radioresistant tumor, perhaps even “radiation proof.” This reputation developed as a result of a combination of factors. First, early in vitro studies of melanoma radio-biology suggested that melanoma cells displayed enhanced postradiation survival vs comparison cells.[1] Second, clinical use of radiation therapy for melanoma did not seem to work very well.[2] This combination, a clinical observation supported by laboratory work, seems to have led radiation therapy to be avoided for melanoma treatment.

These observations are flawed. Subsequent, perhaps less widely publicized, laboratory studies indicated that melanoma cell lines have a wide range of radiation sensitivities; the initial studies appear to have used cell lines that were relatively resistant. Subsequent studies identified melanoma cell lines that are relatively radiosensitive. Second, and perhaps most significantly, the clinical basis for melanoma’s radioresistant reputation is based on obsolete radiotherapy technologies and procedures (some, astoundingly, going back to 1917!) and obsolete, nonrigorous research approaches that would not be accepted for publication in the current era .[2]

Recent reports are finally challenging our assumptions regarding radiation therapy for melanoma. For example, a randomized phase III trial, reported in 2009, demonstrated that adjuvant radiation therapy with conventional radiotherapy (48 Gy in 20 fractions) improved locoregional control in patients with high-risk stage III disease.[3] While no effect on survival was noted, none would be expected from such a local therapy. Nevertheless, this study provided important evidence of a clinically significant benefit for the application of radiotherapy in this disease, namely decreased local recurrence risk.

In their article in this issue, Drs. Magnuson and Halligan present a case study supporting use of radiation therapy for a different purpose: treatment of a potentially life-threatening melanoma tumor deemed surgically inoperable. While the exact reason for inoperability is not discussed, it is reasonable to assume that the patient’s limited life expectancy due to disseminated melanoma played a key part in the decision. Given the location of the tumor, it is highly probable that complications from this specific tumor would lead to the patient’s demise. Postradiotherapy regression of the cardiac tumor mass, documented by computed tomography, suggests that the radiotherapy regimen achieved control of this tumor. Although the patient ultimately died of intra-abdominal disease progression, it is possible that radiotherapy to this critical site prolonged this patient’s life.

Obviously, melanoma patients with life-threatening cardiac tumors are rarely reported in the literature. This report provides support for conventional radiotherapy as a treatment modality in these cases; hopefully, some future patient will benefit from this information. In a broader sense, however, this report joins the growing body of rigorous evidence, some cited by Magnuson and Halligan, supporting a broader role for radiotherapy in melanoma treatment. This may be the most important message from this case report: we must use all effective treatment methods to benefit our melanoma patients. Modern radiotherapy is such an effective treatment method, notwithstanding the conventional wisdom.

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References:
References


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