

The reimbursement system is not the dominant factor influencing reluctance to perform single-fraction radiotherapy for painful bone metastases

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Numerous prospective randomized controlled trials (RCTs) have demonstrated the equivalence of single-fraction (SF) and multi-fraction (MF) radiotherapy (RT) for the palliation of painful bone metastases (1-9). Recent practice guidelines support the use of SF-RT (10-13).

Chen *et al.* reported a survey in the United States of patterns of practice in palliative RT for metastatic non-small-cell lung cancer (14). Among patients receiving palliative bone RT, only 6% received SF-RT. This is consistent with previous surveys which also reported the under usage of SF-RT (15-17). The authors referred to the influence of the reimbursement system on the recommendation of the fraction regimen as well as several previous reports (18-21).

However, we believe that the reimbursement system is not the most important factor influencing the reluctance to perform SF-RT. Even in countries with case payment environments, the usage of SF-RT is far from satisfactory (15). Radiation oncologists continue to believe that higher total doses and fractionations are clinically better. Our recent survey revealed that most Japanese radiation oncologists regard MF-RT as superior to SF-RT until the initial increase in pain, although RCTs do not support the superiority of MF-RT to prevent recurrence (2,3,16). Higher rates of reirradiation for SF patients are interpreted as reflecting a lower threshold after lower doses (22). There may be some confusion regarding these findings, causing the reluctance to perform SF-RT.

Furthermore, we would like to emphasize the importance of defining "uncomplicated bone metastases (UBM)" (23). There may be some consensus that UBM indicate settings equally

palliated by SF- and MF-RT in palliative RT (24). However, this has not been fully defined. Radiation oncologists may be unsure whether or not they can deliver a SF-RT without any clinical compromise. Efforts to fully define UBM are awaited.

In terms of palliative RT to the chest, dose fractionation recommendations are much more complex. The optimal dose still remains unknown, although a recent guideline recommends modestly higher palliative doses (e.g., 30 Gy in 10 fractions) due to a small improvement in 1-year survival (25). Chen *et al.* reported that 33% of patients received more than 50 Gy, which exceeds the dose levels evaluated in nearly all RCTs (14). As authors suggest, there is a clear need for additional studies involving high dose regimens. However, circumstances surrounding dose fractionation for painful bone metastases are obviously different. We do not need any more RCTs, except for the ones concerning specific cases, such as neuropathic pain.

Before giving up the affection of the financing system, we should make some efforts to help radiation oncologists understand that we can treat most patients with painful bone metastases by SF-RT without any clinical compromise.

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