

## Radiotherapy for pain relief from bone metastases during Coronavirus (COVID-19) pandemic

To the Editor:

The worldwide pandemic of Coronavirus Disease (COVID-19) has dramatically and rapidly spread in Italy the last month.

By now, nevertheless Italian government efforts to contain the outbreak with escalating restrictive measures, 205,463 cases were confirmed, with 27,967 deaths (<http://www.salute.gov.it/portale/nuovocoronavirus/>).

Cancer patients are potentially more susceptible to Coronavirus infection with a greater need for intensive support than healthy population since their immune system is often compromised.

Bone metastases are a common complication of advanced cancer that can cause severe and debilitating effects including severe pain, reduced mobility, spinal cord compression, life-threatening electrolyte imbalances and pathologic fracture (Lutz et al., 2011).

Stepwise treatment options consist in pain medication (opioids and nonsteroidal anti-inflammatory drugs, or NSAIDs), systemic therapy (bone modifying agents, i.e. bisphosphonates such as pamidronate or zoledronic acid and denosumab), chemotherapy and/or hormone therapy (dependent on the primary cancer), radiation therapy (external beam radiation therapy (EBRT), stereotactic body radiation therapy and radiopharmaceuticals) and/or surgery (Gralow et al., 2009).

Palliative radiotherapy is a well-accepted treatment for painful uncomplicated bone metastases and provides significant palliation in around 70% of patients, with up to 10%–35% of patients achieving complete pain relief at the treated site (Chow et al., 2001). Moreover, EBRT prevents impending fractures inducing remineralization for strengthening of destabilized bone. It also promotes healing of pathological fractures reducing the skeletal-related events and leading to a better quality of life (McDonald et al., 2014).

In an unprecedented situation such as the ongoing pandemic of Coronavirus disease, the choice of the best treatment for bone metastases must be weighted in a careful way in order to avoid as much as possible the risk of contagion for cancer patients.

To guarantee the best care and reduce the impact of COVID-19 on these patients, the use of pain medication (both opioid and nonopioid analgesics such as NSAIDs) should be the first option and EBRT should be used only if

“unavoidable”, in patients for whom the first treatment strategy is ineffective.

Radiotherapy for bone metastases is historically delivered using hypofractionated schedules. Several randomized control trials (RCTs) asserted that both single fraction radiation therapy (SFRT) and multiple fraction radiation therapy (MFRT) are efficacious in providing pain relief caused by uncomplicated bone metastases (Janjan et al., 2009), although MFRT may be more effective for patients with complicated metastases, neuropathic pain or spinal cord compression. For patients with spinal cord compression but with a poor survival prognosis, a single fraction of 8 Gy seems to be as effective for functional outcome as multifractionated regimens (Rades et al., 2005).

Given the equal effectiveness of the various schedules, decisions regarding fractionation for bone metastases may be tailored based on overall clinical conditions and life expectancy evaluated using appropriate prognostic scores, and costs. For instance, for patients whose life expectancy is less than 3 months, short-course palliative radiotherapy (such as 8 Gy in one fraction) can provide effective palliation while minimizing multiple treatment visits (Gripp et al., 2010).

Therefore in order to minimize the exposure of patients with bone metastases to COVID-19 without compromising oncological outcome, the choice of the short-course palliative radiotherapy with 8 Gy in one fraction sounds to be the most reasonable. In fact this schedule has the advantage to reduce the length of patients' exposure to hospital environment during radiotherapy and, as a consequence, to the risk of contagion.

In all cases the risks and benefits of radiotherapy treatment must be discussed with patients to allow shared decision making and it is primary to guarantee a safe treatment adopting adequate screening and preventive measures for the patients and staff. The radiation treatment room and nearby areas should be sanitized during treatment intervals and protective measures should be provided to patients and radiotherapy technicians. The time patients spend in the waiting room should be minimized encouraging them not to arrive early or allowing them to wait outside the hospital and texting them when their appointment is ready to begin (Wei et al., 2020). Moreover dedicated path for cancer patients separated from other hospital patients should be assured.

Therefore, as National Institute for Health and Care Excellence recommends, “use radiotherapy only if unavoidable” (Mahase, 2020); for patients with painful bone metastases refractory to pain medication or with spinal cord compression the use of single fraction radiotherapy instead of more prolonged RT schedules is safer and more reasonable.

For oligometastatic or oligoprogressive patients, and only if a safe treatment with adequate preventive measures can be offered, a very short course of stereotactic radiotherapy can be hypothesized and not deferred in order to provide a better local control rate and longer duration of symptom palliation.

## CONFLICT OF INTEREST

None.

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## REFERENCES

- Chow, E., Wong, R., Hruby, G., Connolly, R., Franssen, E., Fung, K. W., ... Danjoux, C. (2001). Prospective patient-based assessment of effectiveness of palliative radiotherapy for bone metastases. *Radiotherapy and Oncology*, *61*, 77–82. [https://doi.org/10.1016/S0167-8140\(01\)00390-5](https://doi.org/10.1016/S0167-8140(01)00390-5)
- Gralow, J. R., Biermann, J. S., Farooki, A., Fournier, M. N., Gagel, R. F., Kumar, R. N., ... Van Poznak, C. H. (2009). NCCN task force report: Bone health in cancer care. *Journal of the National Comprehensive Cancer Network*, *7*(Suppl\_3), S1–S32; quiz S33–S35. <https://doi.org/10.6004/jnccn.2009.0076>
- Gripp, S., Mjartan, S., Boelke, E., & Willers, R. (2010). Palliative radiotherapy tailored to life expectancy in end-stage cancer patients: Reality or myth? *Cancer*, *116*, 3251–3256. <http://www.salute.gov.it/portale/nuovocoronavirus/> <https://doi.org/10.1002/cncr.25112>
- Janjan, N., Lutz, S. T., Bedwinek, J. M., Hartsell, W. F., Ng, A., Pieters, R. S., ... Rettenmaier, A. (2009). Therapeutic guidelines for the treatment of bone metastasis: A report from the American College of Radiology Appropriateness Criteria Expert Panel on Radiation Oncology. *Journal of Palliative Medicine*, *12*(5), 417–426. <https://doi.org/10.1089/jpm.2009.9633>
- Lutz, S., Berk, L., Chang, E., Chow, E., Hahn, C., Hoskin, P., ... Hartsell, W. (2011). Palliative radiotherapy for bone metastases: An ASTRO evidence-based guideline. *International Journal of Radiation Oncology Biology Physics*, *79*(4), 965–976. <https://doi.org/10.1016/j.ijrobp.2010.11.026>
- Mahase, E. (2020). Covid-19: Use radiotherapy only if “unavoidable”, says NICE. *BMJ*, *369*, m1338. <https://doi.org/10.1136/bmj.m1338>
- McDonald, R., Chow, E., Rowbottom, L., Bedard, G., Lam, H., Wong, E., ... Tsao, M. (2014). Quality of life after palliative radiotherapy in bone metastases: A literature review. *Journal of Bone Oncology*, *4*(1), 24–31. <https://doi.org/10.1016/j.jbo.2014.11.001>
- Rades, D., Stalpers, L. J. A., Hulshof, M. C., Borgmann, K., Karstens, J. H., Koning, C. C. E., & Alberti, W. (2005). Comparison of 1 x 8 Gy and 10 x 3 Gy for functional outcome in patients with metastatic spinal cord compression. *International Journal of Radiation Oncology Biology Physics*, *62*(2), 514–518. <https://doi.org/10.1016/j.ijrobp.2004.10.005>
- Wei, W., Jiang, H., Chen, W., Zhou, Y., Guo, S., Zhong, G., ... Liu, Z. G. (2020). How should we implement radiotherapy for cancer patients in China during the endemic period of COVID-19? *Radiotherapy and Oncology*, *147*, 100–102.