



Surgical management of bone and soft tissue sarcomas and skeletal metastases during the COVID-19 pandemic



Dear Editor,

The COVID-19 pandemic is overwhelming and placing an unprecedented strain on health systems. While COVID-19 patients are its direct victims, patients with other medical conditions may become collateral damage due to failure to provide them timely and adequate treatment. Oncologic patients, such as those with bone and soft tissue sarcomas and with skeletal metastases fall into this category, particularly those with indication for surgery who may see their treatment cancelled or delayed due to lack of Hospital resources such as ICU beds, blood and even operative rooms which may be transformed into ICU hubs. While judicious selection of patients for surgery during this pandemic is paramount, to date, very little guidance has been provided on how to prioritise them. For the majority of musculoskeletal tumour surgery, the following scenarios and possibilities should be considered:

- 1) **Sarcomas for which surgery is the first or unique curative treatment** (ex. chondrosarcomas and soft tissue sarcomas). Some of these sarcomas can metastasise if not treated. With tumoral growth they can invade neighbouring structures that may ultimately preclude a limb salvage procedure. For these reasons, sarcomas in this group should be considered high priority even in case of severe resource constraints.
- 2) **Sarcoma surgery after neoadjuvant chemotherapy** (ex. osteosarcoma, Ewing sarcoma, some soft tissue sarcomas). While patients with cancer and patients with previous chemotherapy are transiently immunosuppressed, it has been shown that they are not at an increased risk of COVID-19 infection, for which the most important morbidity factor should be considered to be exposure to an infection source [1]. As such, and because surgery in these patients is often curative, its delay may compromise outcome. Therefore, surgical treatment should be considered of high priority, independently of the health system constraints.
- 3) **Recurrent resectable sarcomas without metastases**. Even if radiotherapy has been performed and if the resection has a curative intention these cases should assume a high priority category, independently of the pandemic level.
- 4) **Resectable primitive or recurrent sarcomas with resectable pulmonary metastases** (ex. osteosarcoma, chondrosarcoma, synovial sarcoma). This rare situation manifests as tumoral systemic spread. Although a synchronous and sarcoma surgery

improves survival [2,3] it can be considered of medium priority and in cases of severe health system constraint palliative radio and chemotherapy may be preferred to surgical treatment.

- 5) **Resectable primitive or recurrent sarcomas with non-resectable pulmonary metastases but expecting a longer survival with combined systemic therapy** (ex. osteosarcoma, synovial sarcoma). This situation should be considered a medium/low priority and these cases should not be operated in cases of severe or even moderate health system constraints. In cases in which sarcomas ulcerate the skin and exteriorize, however, surgery becomes mandatory as this situation is not compatible with nursing or familiar care.
- 6) **Solitary and resectable bone metastases from renal cell carcinoma**. This situation is rare but wide resection of such metastases improves overall patient survival. As radiation and chemotherapy are not effective in most patients, surgery is a better option to achieve local tumour control and increase the survival [4]. It should be considered a medium priority surgery and can be delayed for a short period of time.
- 7) **Impending or established pathologic fractures of the appendicular skeleton**. This is a trauma-equivalent clinical situation and treatment decision-making should be based on fracture location and pattern, as it may impair quality of life causing high morbidity and mortality. While some fractures should be considered high priority for surgery (such as proximal hip fractures), others may be considered for conservative treatment (radiotherapy) – such as impending pathologic fractures even when involving the lower limb.
- 8) **Impending or established pathologic fractures of the spine**. Spinal cord compression due to an unstable pathologic fracture is an oncologic emergency, no matter how severe the constraints to the health system are. If the tumour is responsive to radiotherapy, however, this option may be preferable as it is less resource consumptive and may be initially offered in a low resource situation. If the metastasis is radio-resistant or if radiotherapy is not available within the first 12–24 hours, surgery should be considered of high priority to prevent permanent neurological impairment.

Funding

No funding was received in support of this study.

References

- [1] Liang W, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020;21:335–7.
- [2] Meazza C, Scanagatta P. Metastatic osteosarcoma: a challenging multidisciplinary treatment. *Expert Rev Anticancer Ther* 2016;16:543–56.
- [3] Huang YM, et al. The metastasectomy and timing of pulmonary metastases on the outcome of osteosarcoma patients. *Clin Med Oncol* 2009;3:99–105.
- [4] Higuchi T, et al. Long-term patient survival after the surgical treatment of bone and soft-tissue metastases from renal cell carcinoma. *Bone Joint Lett J* 2018;100-B:1241–8.

ICBAS - Instituto de Ciências Biomédicas Abel Salazar, Rua de Jorge Viterbo Ferreira n° 228, 4050-313, Porto, Portugal

* Corresponding author. Department of Orthopaedics, Centro Hospitalar Universitário do Porto, Portugal.
E-mail address: ric_pinto@hotmail.com (R. Rodrigues-Pinto).

14 April 2020

Available online 18 April 2020

Pedro Cardoso, Ricardo Rodrigues-Pinto*
Department of Orthopaedics, Centro Hospitalar Universitário do
Porto, Porto, Portugal