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Commentary: Preconceptions about the neurosurgical management of brain metastases

Messrs Kennion and Holliman report on the "Outcome after craniotomy for recurrent cranial metastases" in this month's journal. In this small but pragmatic report some patients survived more 30 months after a second craniotomy with a median survival of almost 8 months. There are certainly risks in this approach, with some serious complications also seen but the key factors predicting a good outcome were performance status and the primary cancer status. Brain metastases are currently undergoing something of a paradigm shift in the way in which they are managed. The historically nihilistic approach giving way to a more pragmatic neurosurgical attitude in which our role is to maintain the patient in a neurologically sound state with good control of their brain disease, whilst treatment of the extracranial cancer continues uninterrupted. Indeed, there is an international recognition that this vast problem has been under-resourced and investigated with more trials and scientific study urgently needed (www.brain-mets.com). Attend any given neuro-oncology MDT and it is obvious how often and how numerously these patients present as emergency referrals or from the primary cancer oncologists. This new paradigm is leading to patients being diagnosed by screening MRI whilst still asymptomatic, and requests for repeat resection/biopsy to assess HER2 or BRAF pathway sensitivity to direct targeted therapies. As elsewhere in the speciality, preservation of function and thence quality survival is crucial, so if fMRI, awake craniotomy, tractography and mapping are applied to glioma, why not to brain metastases?

Next the surgical obsession with the number of metastases needs to be dispensed with and instead the overall volume (burden) of disease considered, since the patients with the fabled "solitary metastasis" may do no better than another with a large dominant metastasis that is resected and smaller tumours that are almost immediately irradiated and chemotherapy started. Such hybrid approaches will become the new normal and a variety of radiotherapy techniques, including hippocampal sparing whole brain irradiation, are being trialled (https://clinicaltrials.gov/ct2/show/NCT02147028). Likewise even for the patient with a solitary metastasis, can we do better by performing supramarginal resection[1,2]? Or should we be asking for post-operative stereotactic radiosurgery/radiotherapy to the resection cavity? (https://clinicaltrials.gov/ct2/show/NCT01372774)

Finally, as demonstrated by the accompanying paper, the threshold for operating on already irradiated and treated cases may have to be lowered in patients who are systemically and neurologically well; neoadjuvant type approaches in which immunotherapy or targeted therapies are given pre-operatively may change the tumour burden in favour of intervention and the synergistic effects of surgery, chemotherapy and radiotherapy are being reported and trialled (see

http://www.breastcancer.org/treatment/clinical_trials/metastatic-trials-tool). What will be needed from the neurosurgical community? Flexibility, a willingness to review patients and assess "performance status" first hand, close liaison with interested, motivated oncologists (especially in brain tropic cancers such as breast and melanoma), ready access to technologies like SRS and familiarity with the emerging oncology and radiotherapy trends which may only come from subspecialist training and fellowships.

References

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