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In situ photoimmunotherapy: a tumour-directed treatment for melanoma

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Summary

We report a new immunological treatment for advanced cutaneous melanoma which combines laser stimulation with topical application of a toll-like receptor agonist. This treatment, *in situ* photoimmunotherapy (ISPI), provides an alternative to traditional therapies for melanoma patients with cutaneous metastases. A 6-week cycle of ISPI is carried out on cutaneous metastases located in a designated 20 × 20 cm treatment area: 2 weeks of pretreatment with twice-daily topical applications of imiquimod (5% cream under plastic occlusion), with a laser treatment session at week 2 and again at week 4. Topical imiquimod is continued for the entire 6-week cycle. Two patients with late-stage melanoma were treated with ISPI. Patient 1 had the primary tumour and local metastases on the left arm, as well as metastatic tumours in the lungs [American Joint Committee on Cancer (AJCC) stage IV]. Patient 2 had a head and neck melanoma with multiple local metastases (AJCC stage IIIC), which had failed repeated attempts at surgical resection and high-dose radiation therapy. Patient 1 is now free of all clinically detectable tumours (including the lung metastases) >20 months after the first treatment cycle. Patient 2 has been free of any clinical evidence of the tumour for over 6 months. These two cases demonstrate that ISPI can clear local tumour and trigger beneficial systemic responses, with a side-effect profile that compares favourably with other treatments for advanced melanoma.