

A Short Report

Large Solitary Distant Metastasis of Cutaneous Squamous Cell Carcinoma to Skin Graft Site with Complete Response Following Definitive Radiotherapy*

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Abstract: Metastases of cutaneous squamous cell carcinoma (cSCC) in surgical sites distant from the primary lesion is anecdotally regarded as common but seldom reported. Patients with this condition usually have surgical treatment of the metastasis. The presented case is a 77-year-old immunocompetent male. He had surgery for a scalp primary cSCC that was closed with a split thickness skin graft (SSG). He developed a four centimetre (cm) solitary symptomatic metastatic cSCC in the SSG donor site on the right thigh 3 months after graft harvesting. There was a complete response of this metastasis following definitive curative radiotherapy until death from further metastatic disease six months later. Radiotherapy can be an alternative to surgery for large cSCC metastasis.

Keywords: Skin neoplasms, Skin transplantation, Neoplasm metastasis, Radiotherapy.

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Background

Metastatic cutaneous squamous cell carcinoma (cSCC) can spread to surgical sites through implantation or haematogenous spread [4, 6, 9]. We report a case of an isolated metastatic cSCC from scalp to right thigh split skin graft (SSG) donor site, which was successfully treated with definitive radiotherapy, the first reported to be successfully treated in this way.

Materials and methods

A 77-year-old immunocompetent male presented to our radiotherapy department for treatment of a primary multiply recurrent cSCC of the scalp. On physical examination he had already developed right cervical lymphadenopathy involving levels II, III and IV nodes confirmed by Fine Needle Aspiration Biopsy (FNA). Positron Emission Tomography/Computer Tomography (PET) scan showed no distant disease; especially there was no uptake in the right thigh. The multidisciplinary clinic advised surgery as primary treatment followed by adjuvant chemo-radiotherapy to face and neck.

Histopathology revealed a multifocal scalp primary over an area of 5 cm in size and 7 mm thick with closest deep margin of 1mm and closest radial margin of 2 mm. Microscopy revealed poorly differentiated cSCC, with invasion through subcutaneous fat into scalp fibrous connective fascia, and perineural invasion. The scalp defect was closed with split thickness graft harvested from the right thigh. Neck dissection showed 29 of 40 lymph nodes involved, most in level four and five with extranodal spread. He then had locoregional chemo-radiotherapy to scalp and neck.

Three months later he complained of a lump under the donor graft site of the right thigh with a maximum clinical diameter of four cm. There was no lesion on the surface of the graft, that is, no epithelial component. FNA was consistent with metastatic cSCC (Fig. 1). Whole body computed tomography (CT) scan showed no other distant disease, confirming this metastasis to be solitary.

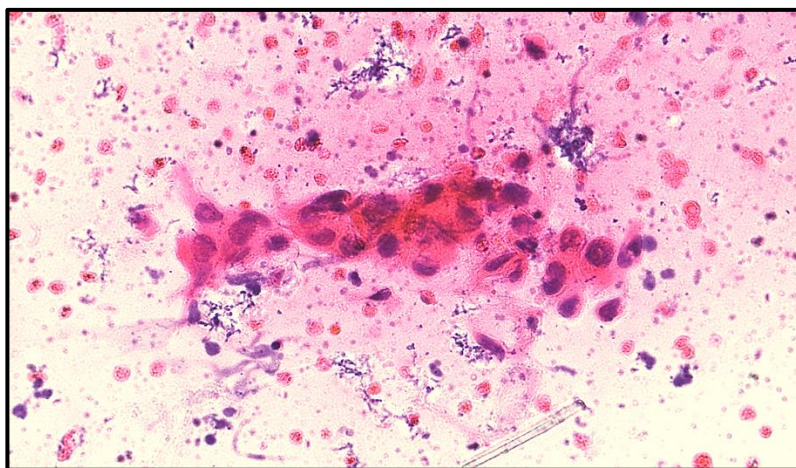


Fig. 1 Fine needle aspiration biopsy of right thigh metastasis. A group of malignant keratinising squamous cells characterised by dense, intensely eosinophilic and orangeophilic cytoplasm in the Papanicolaou stained smear. Nuclei are typically large, centrally placed, angular and irregular, with coarsely granular, sometimes ink-black chromatin.

The background is necrotic. (Papanicolaou stain x 40)

He declined further surgery and underwent definitive curative photon radiotherapy for the thigh mass to a total dose of 40 Gray (Gy) in 10 fractions over two weeks (Fig. 2). This was

delivered with curative intent via an opposed pair of radiation megavoltage photon fields. This resulted in a complete in-field response lasting until death from metastatic disease six months later.

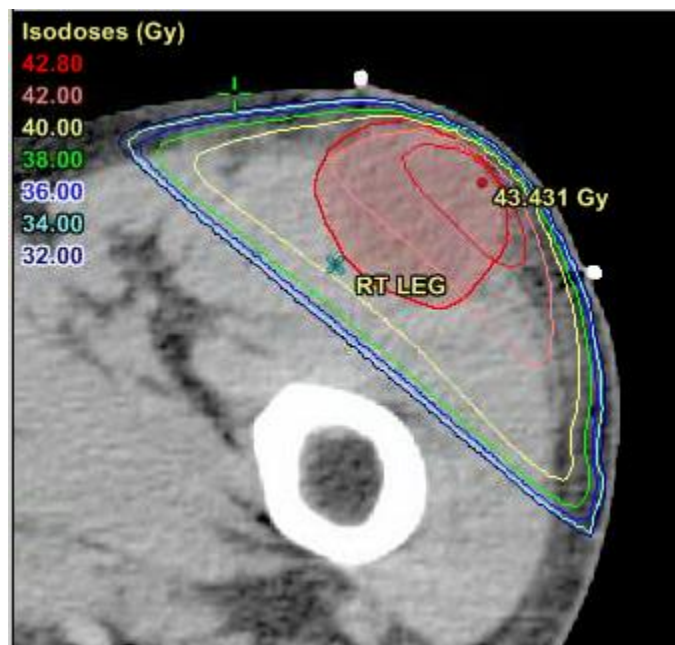


Fig. 2 Planning CT-scan for radiotherapy planning with dosimetry: The red shaded circle is the gross tumour volume and encompasses the right thigh mass. It is entirely covered by an isodose line of at least 40 Gy from an opposed pair of radiation megavoltage photon fields.

Results and discussion

CSCC metastasizing to distant surgical sites is anecdotally common but seldom reported. Ponnuvelu et al describes two distant metastases of cSCC arising in distant SSG donor sites and the authors thought the process was due to inflammation post-surgery [6]. Wright et al. [9] report a haematogenous spread of cSCC, from a right scalp primary metastasizing to a left thigh SSG donor site. Hussain et al. [4] attribute the spread of cSCC to skin graft donor site to iatrogenic seeding using the same hypodermic hollow needle on the flap donor site and tumour site during surgery.

Haematogenous metastases from this patient's primary disease were not surprising given the aggressive histopathology, even though he was immune competent. A recent systematic review and meta-analysis by Thompson et al. [7] reports that significant risk factors for distant haematogenous metastasis were invasion beyond subcutaneous fat, thickness exceeding 6 mm, diameter over 20 mm, poorly differentiated pathology, perineural invasion and immunosuppression. All except the latter were found in our patient.

This metastasis went from a scalp skin malignancy to distant surgically treated skin. Metastasis from a primary to distant organ similar to the organ of origin via haematogenous spread was first reported by Paget [5], who coined the term "seed and soil hypothesis". Later studies have suggested biomechanical forces are also at work in this phenomenon [1]. The possible mechanisms at a molecular level are well described by Ceelen et al. [2]. The complete response to radiotherapy is reassuring and can be considered an alternative

definitive treatment to the metastasis if surgery is declined. Treatment with radiotherapy ensured that there was no tissue loss and therefore better quality of life [3, 8].

Conclusion

In summary, the patient had large solitary metastases of cSCC from a scalp primary growing under his right thigh split-thickness graft donor site three months after surgical harvesting. This lesion had a complete response to curative radiotherapy, with remission until his death six months later. Radiotherapy can be an effective alternative treatment to surgery for cSCC metastases.

Consent

Written informed consent was obtained from the patient for research and publication purposes, along with the accompanying images.

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Competing interests

The authors declare that they have no competing interests.

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