On-line Case Report

Survival of skin graft in mycosis fungoides – a solution for a management dilemma

PARKASH LOHANA, HEMANT SHARMA, SARAH HEMINGTON-GORSE, DEAN E BOYCE

The Welsh Centre for Burns and Plastics Surgery, Morriston Hospital, Swansea, UK

ABSTRACT

We present a case where the surgical defect caused by Fournier's gangrene in a patient with mycosis fungoides was managed in a novel way.

Keywords: Skin wound management – Mycosis fungoides – Skin graft

Mycosis fungoides is a low-grade lymphoproliferative disorder which involves CD4⁺ lymphocytes. It is the most common type of cutaneous T-cell lymphoma. The neoplastic T cells localise to the skin and produce patches, plaques, tumours, or erythroderma.¹

Skin ulceration may occur as a result of the disease or its treatment.² It can be difficult to manage. This is mainly due to a high population of abnormal T-lymphocytes and antigen presenting cells (APCs), which have a deleterious effect on wound healing and graft take.

We present a case where the surgical defect caused by Fournier's gangrene in a patient with mycosis fungoides was managed in a novel way.

Case report

A 70-year-old man was admitted under the care of dermatologists with a history of erythroderma for 12 weeks. He developed a necrotising fasciitis of scrotum and left groin 5 weeks after presentation. He was a newly diagnosed type II diabetic and was on oral and topical steroid as therapy for cutaneous T-cell lymphoma.

The patient was initially managed with radical debridement of necrotic tissue (Fig. 1). He was referred to

plastic surgeons for soft tissue cover to the left groin, scrotum and penis. His initial wound swabs were positive for methicillin-resistant *Staphylococcus aureus* (MRSA), *Escherichia coli*, Group B streptococci and mixed anaerobes. He was commenced on intravenous vancomycin and meropenam on the advice of a microbiologist.

The wound was further debrided and a vacuum-assisted closure dressing was applied under the care of plastic surgeons. The patient underwent further debridement and the testicles were buried within a pocket in each medial thigh. After much discussion regarding the risks of an unhealed donor wound, the application of a widely meshed split skin graft from the anterior thigh was attempted in order to expedite healing of the large groin defect. The graft failed to take. However, the donor site healed uneventfully.

After discussion with an oncologist, the decision was made to irradiate a potential graft donor area with single, low-dose 5-Gy radiotherapy (to minimise the risk of pathogenic T-lymphocytes in the donor skin). The patient underwent split skin harvest and application 3 days after irradiation. First graft inspection on the fifth day, showed 100% uptake of previously irradiated skin over both left groin and scrotum (Fig. 2). The donor site healed uneventfully in less than 18 days.

Figure 1 Patient following initial radical debridement of necrotic tissue.

Figure 2 Patient five weeks after application of irradiated graft.

Discussion

Lesions of mycosis fungoides, a neoplasm of T-lymphocytes, are difficult to treat. Low-dose X-rays have been successful in treatment of individual lesions and in the effective palliation of the patients.³ In mycosis fungoides, both the disease and its treatment can pose a problem in the management of ulcerated wounds. Skin grafts have difficulty in taking and donor sites may not heal due to damage of epidermal appendages by both mycosis fungoides and its treatment.² In addition, there is also an increased pathological population of T-lymphocytes which leads to an increased immunogenic response and hence failure of the graft. T-lymphocytes have been known to exert a significant effect on wound healing.⁴

It has shown in the literature that photodynamic therapy (PDT) can prolong allograft survival by modifying the donor skin antigenicity.⁵ By depleting the donor antigen presenting cells (APCs) with PDT, the lymphocytes stimulated by non-APCs become anergic, hence prolonging graft survival. It has also been shown that UV-B irradiation can decrease the cytotoxic T-lymphocyte activity which leads to a decrease in delayed type hypersensitivities and, hence, an increase in graft uptake.⁶

We used the same principle for managing our patient. It may, however, seem a paradox to irradiate an area prior to graft harvest as this may have a deleterious effect both on graft take and donor-site healing. As discussed earlier, graft donor-site healing may be delayed in mycosis fungoides. Our experience showed that single, low-dose

irradiation of the donor site may, in fact, be beneficial by reducing inflammatory cells in both graft and donor tissue. The graft can be taken 48–72 h after irradiation. This leads to a decrease in APCs and, therefore, a decrease in the production of pathological T lymphocytes and increase in graft take.

Conclusions

The single, low-dose radiotherapy to the potential donor site has proven beneficial for skin graft survival in our patient. We recommend that it should be considered if a similar management dilemma arises.

References

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