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Micrografting Reconstruction of a Cutaneous Giant NK/T Cell Non-Hodgkin Lymphoma. A Case Reports

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Abstract

Cutaneous Natural Killer (NK)/T cell lymphomas represent a rare type of lymphoid malignancy without nodal involvement and have been recently classified by TNM system to correctly differentiate them from Mycosis Fungoides (MF) and Se´Zary Syndrome (SS). Nasal type NKTCL involves the upper aero digestive tract with the nasal cavity, nasopharynx, paranasal sinuses, tonsils or palate. The treatment for this type of malignancy is not standardized, and surgical excision is mandatory to obtain complete molecular characterization of the lesion. A clinical case of primary forehead cutaneous Natural Killer (NK)/T cell lymphomas is described stressing the importance of rapid reconstructive procedure to remove rapidly and radically the lesion and avoid a complicated post-operative outcome. Skin micrografting has been well described in the literature for the treatment of complex wound from several types of benign lesions but this is the first clinical case reporting the application of the technique for tissue reconstruction in the oncology setting.

Keywords: Hodgkin lymphoma; Skin micrografting; Oncology setting

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Introduction

Cutaneous natural killer (NK)/T cell lymphomas represent a rare type of lymphoid malignancy without nodal involvement and have been recently classified by TNM system to correctly differentiate them from Mycosis Fungoides (MF) and Se´Zary Syndrome (SS). Nasal type NKTCL involves the upper aero digestive tract with the nasal cavity, nasopharynx, paranasal sinuses, tonsils or palate. Non nasal NKTCLs frequently involve the skin, testis or the gastrointestinal tract. The mortality rate is higher than in other lymphomas and has poorer response rates to radiation and chemotherapy. The complexity of this rare diagnosis, together with the unusually rapid progression of the giant skin lesion (Figure 1), the need for mandatory surgical excision to obtain histological outcome and the subsequent reconstructive micrografting procedure, provided the rationale for documenting this original case. In fact, while skin micrografting has been previously described in the treatment of complex wounds from benign diseases, this case is the first report of the technique in the oncology setting.

Case Presentation

A 36–year-old man presented with a progressively worsening giant cutaneous nodule in the middle of the forehead (Figure 1). The lesion was bleeding giving severe pain and causing significant impairment in the patient's daily social and work activities. Three weeks prior to presentation, cytology biopsy revealed lymphoma, but the diagnosis required to be completed with a more comprehensive histological assessment and molecular analysis to start the appropriate treatment. There was no clinical or symptomatic evidence of upper respiratory involvement. Positron Emission Tomography (PET) revealed a large skin lesion of the forehead, without involvement of locoregional and distant lymph nodes. On physical examination, the patient had no other cutaneous lesions. After extensive multidisciplinary discussion, it was decided to proceed with a surgical approach to remove rapidly and radically the forehead lesion, followed by reconstruction using a micrografting technique (Figure 2). This reconstructive procedure was chosen both to decrease the risk of skin flap involvement by the disease and to reduce the post-operative morbidity that might postpone the beginning of the chemotherapy. The clinicopathological findings were most consistent with

Figure 1: Forehead primary lesion.

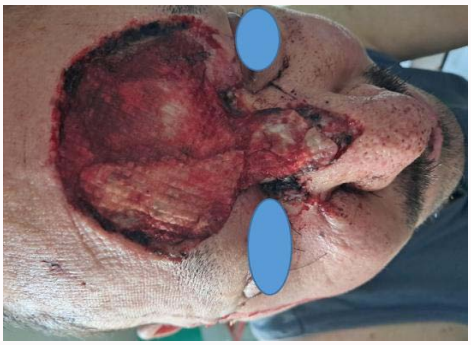

Figure 2: 1st post-operative day.

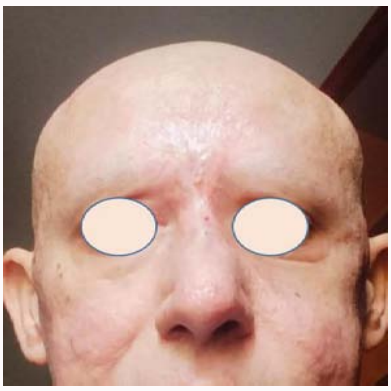

Figure 3: 6-month post-operative.

extra nodal NK/T-cell lymphoma, nasal type, involving the dermis, subcutaneous tissue and muscular layer. The post-operative course was uneventful, with no evidence of inflammation or infection and wound healing was nearly completed by week 9 (Figure 3). Early appearance of bilateral cheek subcutaneous disease strengthens the importance to start rapidly the medical treatment. Six-month follow-up demonstrated an impressive aesthetic result, with CT scan showing the absence of local and distant relapse.

Discussion

(NK)/T Cell Lymphomas (NKTCLs) are a rare and distinct type of malignant non-Hodgkin lymphoma, 68% of being nasal type, 26% extra nasal type and 6% aggressive or unclassifiable type [1-3]. The average life expectancy is of 8 months. Nasal type lymphoma is frequently located in the upper aero digestive tract and typically associated with the Epstein Barr virus. The skin is the most common site for NKTCL dissemination, but it is not always reported as primary site as in our case. Skin lesion is more common in individuals younger than 20 years of age and in our case the differential diagnosis was easy due to the rapid progression of the lesion. Patients with extra nasal involvement have a worse survival rate and more severe clinical features. The treatment for this type of malignancy is not standardized, and surgical excision is mandatory to obtain complete molecular characterization of the lesion [4,5]. In the reported case, it was mandatory to remove rapidly and radically the lesion and avoid a complicated post-operative outcome.

Skin micrografting has been well described in the literature for the treatment of complex wound from several types of benign lesions but this is the first clinical case reporting the application of the technique for tissue reconstruction in the oncology setting.

Previous clinical experiences have already shown that autologous micro grafts obtained by mechanical disaggregation of a small piece of dermal or connective tissue may improve tissue repair of postoperative complex wounds [6-9].

The autologous dermal micro grafts used in this patient were obtained following Hy tissue Micrograft Technology instruction for use, permitting the disruption of human connective and skin tissues by the use of this disposable medical device, able to fragment soft tissue biopsy into micro grafts preserving the so-called regenerative niche capable of stimulating the regenerative processes [6]. Several investigations have examined the effectiveness of regenerative medical techniques and revealed that micro fragmented tissue is able to stimulate skin regeneration through a real regenerative process [10]. The in vitro characterization results confirmed that the isolated tissue units are rich in collagen matrix, which supports the 3D proliferation of autologous cells. In addition, they provide anti-inflammatory mediators hat can regulate the healing microenvironment, enhancing tissue repair, capillary remodelling, and the deposition of newly synthesized extracellular matrix via growth factor activity.

Decreasing in the expression of proinflammatory cytokines explains both the reduction of inflammation and infection of the surgical bed and the contribution in the reduction or elimination of the scarring effect during the healing process.

All these characteristics proved effective in the described treatment achieving all preoperative objectives and enabling both an early start of the treatment for the tumour and a progressive healing process, leading to a complete “restitutio ad integrum” of the entire area.

Conclusion

Autologous skin micrografting - has yielded positive outcomes in the treatment of a rare giant skin lymphoma and confirms its role as a viable reconstructive therapeutic option for wound healing in oncology. This approach gave us the opportunity to: a) reach the histology with an easy surgical procedure; b) start the chemotherapy as soon as possible; c) obtain a healing regenerative process without morbidity and d) have an acceptable aesthetic result.

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