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Marjolin's Ulcer: As an Aggressive Tumor: A Case Report

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Abstract: Review Article

The severity of tissue damage caused by high-voltage electrical injuries to the limbs often complicates the management of such burns. Repair procedures are sometimes ineffective, and amputations become unavoidable. We report the case of a young patient who sustained high-voltage electrical injuries to both upper limbs, resulting in bilateral shoulder disarticulation.

Keywords: Electrical injury, high voltage, disarticulation, shoulders.

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INTRODUCTION

Marjolin's ulcer (MU) is a rare cutaneous malignancy first described by Dr. Jean-Nicolas Marjolin in 1828 [1]. This entity is well described in the literature as a squamous cell carcinoma (SCC) that develops within a pre-existent cutaneous scar or chronic non-healing wound, such as burn scars that represents most cases, less common settings have included stasis, pilonidal sinuses, chronic venous stasis ulcers, vaccination sites, pressure sores, acne conglobata, osteomyelitis, hidradenitis suppurativa, frost bite, chronic fistulas [2, 3]. MU may develop at any age but tends to affect older individuals.

This is likely due to the typically long latency period from inciting event to malignant transformation, which have rages 20 to 35 years. A male predilection exists. Lesions occur at any anatomic site, but the lower extremities and the head and neck region are most frequently affected. The Predominant malignancy in MU is squamous cell carcinoma followed by cases of basal cell carcinoma and malignant melanoma which explains that recently, Marjolin ulcer definition is used synonymous with squamous cell carcinomas (SCC) detected on scar tissues.

The treatment of choice is wide surgical resection. MU is typically an aggressive malignancy with a high recurrence rate and poor 5-year survival. The tumors behave aggressively and have a propensity for local recurrence and lymphnode metastases. Marjolin's ulcers have a high tendency to metastasize [4]. Early recognition and proper staging offers the best chance for cure [5]. There are no confirmed effective protocols for treatment of this disease. We report an uncommon case of an advanced and recurring marjolin's ulcer of the left forearm and wrist of an 47 year-old man.

An 53-year-old Mediterranean man, of low socio- economic level, single, mason by profession, right- handed, having as antecedent a thermal burn by gasoline flame involving the left upper limb specifically the forearm the wrist and part of the hand 52 years ago. On admission, the patient was hemodynamically and respiratorily stable, apyretic, with a normal colored conjunctiva, weight 64 kg without any notion of weight loss. Locally, he presented an ulcerating lesion on the outer surface of the lower extremity of the forearm and wrist measuring 8cm in long axis, painful, fixed in relation to the superficial and deep planes, bleeding on contact without clinical or radiological adenopathy. An anatomopathological study was requested and came back in favor of a squamous cell carcinoma, considering the patient's history, we suspect that it is a marjolin ulcer on a 52 year old burn.

Figure 1: Patient admission photos

Due to the intimate contact of the tumor with the bones of the wrist and the bones of the forearm, and the histological nature of the tumor, and following a multidisciplinary consultation, the decision was to perform a mid-left forearm amputation associated with a homolateral axillary curage, The anatomopathological study came back in favor of a moderately differentiated and infiltrating squamous cell carcinoma measuring 9cm and the resection limit passes in healthy tissue and remains at 11cm, it arrives in contact with the bone but without infiltrating it with a negative curage product 0+/24N.

Figure 2: Per-operative pictures showing a mid left forearm amputation with homolateral axillary curage was indicated

The patient was referred to plastic surgery and oncology for regular follow-up, but was lost to follow-up after 4 months. One year after his first operation, the patient presented with an ulcerative lesion on the anterointernal aspect of the left arm, bleeding on contact, painful, measuring 5 cm in length, fixed in relation to the profound plane, evolving for three months according to the patient, thus motivating him to return to our

training.

ABTAP angios can was performed, showing an image of:

- Soft tissue formation of the left scapular region, well limited, oval in shape, with fine partitions and parietal calcifications measuring 55x40 mm, in front: it comes into intimate contact with the deltoid and intraspinous muscles opposite with loss of the separating fatty border, in the back: it comes into contact with the skin covering opposite, without any noticeable skin thickening.
- Left mediastinal and axillary adenopathies of secondary appearance.
- Tissue formations in the posterior soft tissues of the left scapular and dorsal region without any sign of regional invasion. To be compared with histopathological data the decision of the staff between the plastic surgeons, the oncologists and the anaesthetists was to admit the patient to the operating room for a disarticulation of the left limb initially amputated at the level of the forearm with a biopsy of the scapular lesions which turned out to be dermal cysts during the operation. Subcutaneous nodules and necrotic homolateral axillary and supra-clavicular adenopathies suggestive of tumor recurrence.

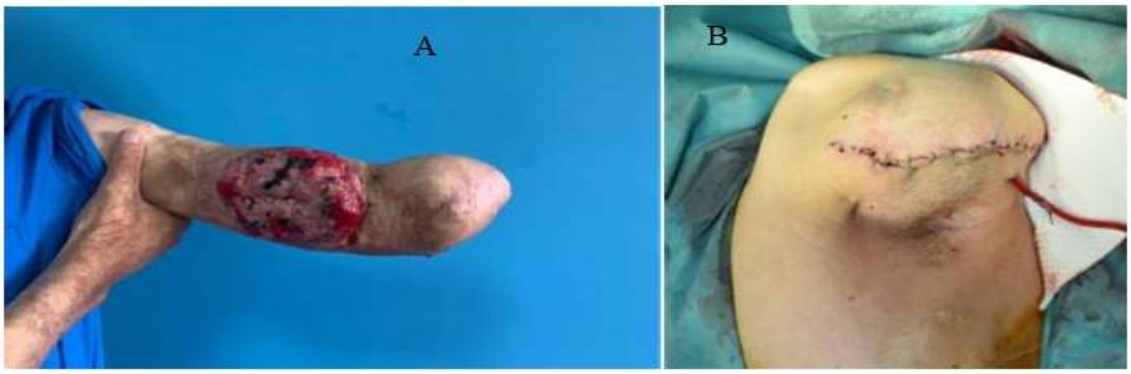

Fig 3: A: Recurrence in the anterointernal aspect of the arm 1 year later with two adenopathies, and a pulmonary metastasis made of nodules. B: A Clean-up disarticulation performed followed by adjuvant treatment with chemotherapy was indicated in this patient

The anatomopathological study of the surgical specimen came back in favor of a moderately differentiated squamous cell carcinoma and infiltrate, the bone is not infiltrated by the tumor, the surgical limits of the soft parts pass in healthy tissue and for the scapular and deltoid cysts it is a reworked fibro-muscular tissue. No signs of malignancy.

The patient was sent directly to oncology for adjuvant treatment with chemotherapy. After two sessions and in half a year, the patient presented a subcutaneous mass in the warm left axilla, fixed in relation to the deep and superficial planes.

Fig 4: Recurrence of the patient in the left axilla

An MRI was performed, showing a voluminous locally infiltrating left axillary cystic mass with vascular envelopment associated with Given the non-operability of the lesion and the metastatic nature of the tumor, the patient is a candidate for chemotherapy as part of a palliative treatment.

DISCUSSION

MU refers to the group of malignant tumors that develop on several types of scars and chronic ulcerations. In most cases, itis a burns car, as was the case in our patient. In a review of the literature by Mahlon *et al*., [6], which included 443 patients, 76.5% of these patients had developed MU on old burns cars. MU can also develop on vaccination scars [7], osteomyelitis scars [8], chronic venousstas is scars [9] or pressure sores [10]. Although this malignant transformation of scars has been noted since 100 BC by Celsus, it was not until 1823 that François- Nicolas Marjolin made the first clinical description [11-13]. In most cases, it is a cutaneous squamous cell carcinoma [13-15] as reported in our case. MU usually develops on the limbs and trunk [13] as described in our patient, but also and more particularly on the large flexion folds since the ulceration is sustained by antagonistic muscle forces and frequent trauma. It can also occur in the neck [16] and scalp. The time to onset of these skin tumors varies on average from six weeks [17] to 30 years [18]. The latency period in our patient was 52 years, which is much longer than the figures described in the literature. The etiopathogenesis of DFU is multi factorial and remains poorly elucidated. Indeed, these quelae of fibrous burns are poorly vascularized, they ulcerate continuously and are very sensitive to micro trauma. Some authors even report the concomitant role of certain mutations, in particular of the Fasgene [15], and of certain local factors such as certain toxins [19]. Castillo and Goldsmith [19] have also shown that immune deficiency could play an important role in this etiopathogeny. On the other hand, most authors agree that it is rarer to encounter neoplasia on operated and graft-covered burns equelae. Chlihi *et al*., [11] reported on a series of 54 cases of burn scarde generation collected over an eight-year period in the burn and plastic surgery department of the Ibn Rochd University Hospital in Casablanca, Morocco, and noted that 78% of the patients had no initial management of the burn. The prognosis of DMU remains guarded given its high metastatic potential, risk of recurrence, and high mortality and comorbidity [20, 21]. Although the management of DMU is controversial, radical surgery remains the treatment of choice, combined in some cases with radiotherapy and chemotherapy. There is currently no consensus on lymphatic dissection. Most authors agree that prophylactic lymphnode dissection is not necessary [22, 23], while Novick *et al*., [23] emphasize the importance of prophylactic lymphnode dissection, especially in cases of lower and upper limb MU. In our case, lymphnode dissection was performed, even though the clinical examination and radiological explorations initially showed no lymphnode involvement an confirmed by a negative dissection product, only at the recurrence that homo lateralaxillary adenopathies were found, hence the interest in discussing the sentinelnode and its effectiveness in this type of case. Eastman *et al*., described successful preoperative lymphoscintigraphy and intraoperative lymphatic mapping in 5 out of their 6 reported patients [24] None of these patients had palpable lymphadenopathy. Of the 5 patients who underwent successful SLNB, microscopic metastases were identified in 4 of them (80%). The authors note that the prognostic significance remains unclear still, though earlier identification of nodal disease allows for accurate staging and earlier management. In contrast, Motamedolshariati *et al.,* reported only a 2% success rate of sentinel node mapping in their cohort of 10 patients [25]. They attribute this failure to scant lymphatic vessels in the traumatized skin surrounding the Marjolin's Ulcer. Further studies are required to elucidate the indications and rate of success for SLNB. Shen *et al*., (2014) used preoperative PET-CT to identify sentinel node metastases, but found on ultrasound-guided biopsy that many nodes were reactive hyperplasia and without metastatic disease [26]. They concluded that PET-CT is insufficient to diagnose regional metastases. Patients with advanced tumors should undergo workup for distant metastases with chest radiography, head CT, and abdominal ultrasound [27]. Enlarged, palpable nodes

were the primary indications in nine papers, high-grade tumors in two papers [28], and pathologic diagnosis of melanoma in one paper [26].

For all these reasons, the only really effective therapeutic weapon effective therapeutic weapon in the case of Marjolin's ulcer is preventive treatment, because it is the only one that allows to avoid the passage from a benign scar to a malignant and virulent tumor. This preventive treatment, which is based on the coverage of acute burns of deep acute burns, rehabilitation and the management of scars, and management of scars by compression. In order to avoid the development of hypertrophic and retractile sequelae that can lead to chronic ulceration, excision-grafting must be performed within two weeks of the deep burn following the deep burn in the "functional" areas, such as the joints, and functional" areas, such as joints, and within three weeks in other areas. As soon as healing is achieved, rehabilitation and compression are started. In the limbs, physical therapy performs active and passive mobilization in order to maintain joint amplitudes and prevent tissue retraction of the tissues. Compression involves the use of compression garments and the application of silicone plates, during the entire period of scar remodeling, 18 months to two years.

Massages performed by the physiotherapist, allow the scars to become more supple and to limit adhesions. Skin hydration with neutral emollients, prevents the skin from drying out, the appearance of cracks and the reopening of wounds.

CONCLUSION

The occurrence of squamous cell carcinoma on burns cars is an infrequent but formidable complication. Its treatment is primarily preventive, based on correct initial management of burn lesions and regular monitoring of unstable scars. Moreover, in case of suspicious lesions, surgical treatment must be radical from the outset.

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