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Orginal Research Article

Marjolin's Ulcer: A Complication of Chronic Ulcers and Scars in A University Teaching Hospital in Southern Nigeria

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Abstract: Marjolin's ulcer (MU) represents malignant degeneration or transformation that typically occurs over a period of time in chronic ulcers, post-burned lesions and scars. It is a rare occurrence but a serious complication of chronic ulcers and scars. The aim of this study was to evaluate the epidemiology, clinico-pathological pattern, treatment outcome of patients with Marjolin's ulcer in a Teaching Hospital in Southern Nigeria. We evaluated patients who presented with ulcers resulting from chronic wounds, post- burned lesions and scars who had histologically proven skin cancers between January, 2013 and 2015 .All chronic ulcers lasting more than 6 months with clinical evidence of malignancy were biopsied for histology. The patients 'case notes and cancer register were also assessed. Patients with negative biopsy results for malignancy were excluded in the study. A total of 13 patients were diagnosed Marjolin's ulcer within 3 years of the study period. 10 patients were males while three were females with age range of 24 to 72years, the mean was 38years, and peak age was 36- 42 years. Squamous cell carcinoma was the leading cause constituting 9(69.2%), baso-squamous carcinoma 3(23.1%) followed by basal cell carcinoma 1(7.7%). Aetiologically, trauma is the leading cause making up of 10 (76.9%) and followed up by post-burned injuries 3 (23.1%). The commonest site of lesions were the lower limbs 9(69.2%), the upper limb 2(15.4%), the head/neck 1(7.7%) and the trunk 1(7.7%). The tumour types were exophytic 5(38.5%) while the infiltrative type was 8(61.5%). The tumour size less than 5cm were 4(30.8%) while size greater than 5cm 9(69.2%). The most common reason for late presentation was poverty and treatment by traditional healers. Surgical resection with skin graft or flap was the main modality of treatment followed by radiotherapy and chemotherapy. Two patients had amputation of the limbs because of bony involvement. In conclusion, Marjolin's ulcer is a malignant degeneration of chronic ulcers and scars. Late presentation is a common feature. Delayed presentation was mainly due to economic problems and treatment by traditional healers. Therefore, health education and early closure of wounds would help to prevent the development of marjolin's ulcers among our patients.

Keywords: Marjolin's ulcer, squamous cell carcinoma. Chronic ulcers, post-burned scars, malignant degeneration

INTRODUCTION

Marjolin's ulcer is the malignant degeneration or transformation that occurs over a long period of time in chronic leg ulcers, post burned lesion and scars. Celsus AC deserves acknowledgment for his earliest recognition of this phenomenon in the first century AD [1]. Later on in 1828, the French physician Marjolin JN etiologically classified ulcers as those due to "local" causes and those secondary to "internal" causes, however he couldn't specifically recognize the malignant potential of these lesions [2, 3]. Dupuytren[4] in 1839 provided full description of a case of amputation for a cancer in a patient who had suffered a sulfuric acid burn injury [5]. Da Costa in 1903 was the first to coin the term Marjolin's ulcer (MU) to describe malignant degeneration of skin scars particularly the post-burned scars.

Marjolin's ulcer has different histological variants such as squamous cell carcinoma, baso-squamous carcinoma, basal cell carcinoma, and melanoma. The study highlights the epidemiology, histo-pathological pattern and the modalities of treatment used in the management. Early presentation and wound cover will go a long way to prevent the onset of malignant transformation of chronic wounds and scars. Early wound coverage in full thickness skin burns which predisposes patients to unstable scars leading to later transformation is advocated. The incidence of Marjolin's ulcer is on the increase, and such concerted effort should be put in place to checkmate its aggressive and degenerative potential.

Clinically Marjolin's ulcers present in two morphologic forms, viz: the ulcerative and exophytic varieties. The commonest form is the flat, indurated, ulcerative variety while the less common form is the exophytic papillary variety. The lower limbs are the most frequently affected part of the body followed by the upper limbs.

Surgical resection of the primary tumour with a wide margin of 2-4cm horizontal, circumferential clearance and radiotherapy constitute the most effective oncologic modalities of management. The overall mortality rate is over 20% despite the best approach to management.

Fig- 1: Marjolin's ulcer arising from post burn scar lasting more than 34 years

Fig-2: Marjolin's ulcer arising from chronic leg ulcer lasting 18n.years

Patients and Methods:

We evaluated patients who presented with ulcers resulting from chronic wounds post-burned lesions and scars who had histologically proven skin cancers between Jan, 2013and December, 2015 and were included in the study. The patient case-notes and the cancer register were assessed.

RESULTS

A total of 13 patients were diagnosed Marjolin's ulcer within 3 years of the study period. 10 patients were males while three were females with age range of 24 to 72years, the mean was 38years, and peak age was 36- 42 years. Squamous cell carcinoma was the leading cause constituting 9(69.2%), baso-squamous carcinoma 3(23.1%) followed by basal cell carcinoma 1(7.7%).

Aetiologically, trauma is the leading cause making up of 10 (76.9%) and followed up by post-burned injuries 3 (23.1%). The commonest site of lesions were the lower limbs 9(69.2%), then followed by the upper limb 2(15.4%), the head/neck 1(7.7%) and the trunk 1(7.7%). The tumour types were exophytic 5(38.5%) while the infiltrative type was 8(61.5%). The tumour size less than 5cm were 4(30.8%) while size greater than 5cm were 9(69.2%). The most common reasons for late presentation were poverty and treatment by traditional healers.

Surgical resection with skin graft or flap was the main modality of treatment followed by radiotherapy and chemotherapy. Two patients had amputation of the limbs because of bony involvement.

DISCUSSION

Cutaneous scars and chronic ulcers were reported to undergo malignant transformation but constitute a small segment of skin cancers. Marjolin's ulcer has been found to develop in scars resulting from burns, smallpox vaccination and radiation as well as in the setting of chronic venous ulcers, pressure ulcers, osteomylitic sinus, urinary fistulas, pilonidal sinus, and gummas [8]. Old burn scars have been reported as the leading cause of Marjolin's ulcers [2]. The relative risk of Marjolin's ulcer in chronic ulcers as compared with the risk of developing squamous cell carcinoma on the lower limb for a normal population has been estimated to be 5.8 based on two epidemiological studies from Sweden [19, 10]. In another study from Australia, the frequency of carcinomas associated with chronic leg ulcers was 2.2%. [11] In the current study the incidence of Marjolin's ulcer among skin cancers was evaluated to be 1.8%.

Marjolin's ulcer is relatively commoner among males than the females [12, 13] and no age is immune to it with individuals from almost all age groups including children being afflicted worldwide [14, 15]. In the current study, we noticed the preponderance of males over the females with a male to female ratio of 10:3.

There is usually a prolonged latency period between sustaining initial burn injury or traumatic wounds and developing Marjolin's ulcer. There is a considerable variation in the lag periods reported in literature [16,17]. The average latency period is 35 years [18]. Based on the latency periods, the Marjolin's ulcer s are divided into acute and chronic subtypes .The acute type develops within one year of injury while the chronic type refers to those that develop after one year. In the current study, the latency period was between 5 and 72 years with an average period of 38years, peak period was between 36- 42years. It occurred more in patients with deep flame burns than other injury mechanisms such as scald, chemical, electrical and contact burns [6] while post traumatic ulcer was the leading cause of Marjolin's ulcer in an African study.

The reason for late presentation was evaluated, and poverty and treatment by traditional healers using herbal preparations were the leading causes of late presentation. Other reasons advanced were treatment in the health centers and self-medication.

The commonest site of Marjolin's ulcer in our patients was the lower limbs 9(69.2%), then followed by the upper limb 2(15.4%), head/neck 1(7.7%) and trunk 1(7.7%). The study has shown that the most common site is still the lower limbs followed by the upper limbs. The current study is in accordance with a similar study in the same institution [14].

The diagnosis of Marjolin's ulcer is based on the suggestive finding s in the patient's history, detailed examination of the ulcer and its draining nodal basin, and the histology of the lesion. The clinical signs suggestive of Marjolin's ulcer include averted or rolled margins, exophytic or granulation tissue or flat, indurated ulcerated ulcer, increasing size, bleeding and regional lymphadenopathy. The classic triad of nodule formation, induration, and ulceration at the post burned scar should prompt a biopsy to confirm the diagnosis of Marjolin's ulcer [18].

Once biopsy confirms the diagnosis, determination of the local extent of the lesion and staging comes to the fore. A magnetic Resonance Imaging (MRI) or computed tomography (CT SCAN) is performed to determine the local extent of the lesion and invasion of any underlying structure. MRI is certainly the ideal imaging tool for evaluation of the status of the soft tissue infiltration, including the neurovascular bundle [14]. In the current study, plain xray to determine the bone invasion was commonly done in our resource poor economy. MRI was also done by patients who could afford it.

The draining lymphatic basin was staged clinically and radiologically with either high resolution ultrasonography, MRI or CT scan. Given that distant metastasis is common in the chest, liver, brain –scalp and face lesions, chest x-ray, abdominal ultrasonography and brain CT scan were done.

Metastatic spread of Marjolin's ulcer assumes different dimensions. To a large extent, Marjolin's ulcer that is confined to the scar shows typically slow growth and is amenable by surgery. On the contrary, when Marjolin's breaks free of the scar it metastasizes rapidly via lymphatic spread [18]. Once broken free of the confines of the primary lesion, squamous cell carcinoma of the Marjolin's ulcer variety is known to possess greater metastatic potential than the squamous cell carcinoma occurring de novo [16]. At presentation, regional lymph nodes involved are high as 20-36% of patients [17] or even higher in Aydogdi et al 66.6% [16]. In the current study, it is a high as 26%.

Stage of the Marjolin's ulcer has an important implication for the management as well as the prognosis , as in the case of other cutaneous malignancies , staging is performed by considering the size of the primary lesion (T), lymph node involvement (N), and distant metastasis(M), thus the TNM classification is usually adopted.

Histopathologically, the study revealed squamous cell carcinomas having 10(76.9%), baso-squamous cell carcinoma 2(15.4%) and basal cell carcinoma 1(7.7%). However, some studies have shown the presence of squamous cell carcinoma as the leading type, as in our study, and basal cell carcinoma, melanoma, baso-squamous cell carcinoma, sarcoma, squamous cell carcinoma-melanoma, and other rare neoplasms. Some other studies have shown rare tumours varieties emerging from post burned lesion to include fibrosarcoma, lipo-sarcoma, dermato-fibrosarcoma protuberans, and mesenchymal tumours [18].

The treatment of Marjolin's ulcer is based on the following modalities, viz: surgery, radiotherapy and chemotherapy. Surgery constitutes the mainstay of treatment of the disease. The oncologic clearance entails excision of the primary lesion with a 2-4 cm horizontal, circumferential clearance margins and vertical clearance of the uninvolved next barrier structure. Initial dissection should be done with cautery, then the scalpel is used to trim the edges for better healing. A histopathologist is usually present with the surgical team when performing important resection s to ensure resection free margins with the help of frozen section performed simultaneously with the surgery. The choice of skin graft was to enable us detect the

recurrence as early as possible but flap surgery is done when the bones were exposed following amputation. Amputation was done in two cases where the bones of the humerus and proximal tibia were invaded and flaps were raised to cover the stumps.

The sentinel lymph node dissection (SLND) has been primarily employed for staging the regional lymph node basins in malignant melanoma of the limbs, however there is a recent growing recognition of its utility among patients with non-melanoma skin cancers [19]. The SLND is done to take out one or two nodes for histopathological staging. Regional lymph node clearance was not done during the study because of its antecedent morbidity of lymphedema.

Apart from surgery, radiotherapy forms the next modality of treatment. Given the aggressive biological behaviour of the Marjolin's ulcer and the frequent squamous cell carcinoma and its histological variants, radiotherapy finds an important adjunctive role in these malignancies. Radiotherapy is lacking in our center, and as such, the patients are sent to nearby hospital for it.

The role of chemotherapy is not well established, however it constitutes part of the aggressive multimodal therapy when surgery is not an ideal modality of treatment. Some of the indications are in the treatment of unfit patient for surgery, presence of metastasis, recurrent disease and patients who could not consent to surgery. The chemotherapy is usually based on 5-fluoro-uracil with a combination of cisplastin, methotrexate and bleomycin. It could be in the form of neo-adjuvant or adjuvant chemotherapy.

The prognosis of Marjolin's ulcer is poor when it has become an advanced disease. Marjolin's ulcer tends to be more aggressive and rapidly spreading as compared to other skin carcinomas of similar histotypes. [20] The survival rate is as high as 52% and 23% at 5 and 20 years. [21] In the current study, the prognosis is as high as 46% in 5 years. The poor prognostic clinical features of Marjolin's ulcer in the study included regional nodal spread, local extension of lesion , infiltrative variety , primary lesion >5cm in its widest diameter, latency period of >5 years , recurrent Marjolin's ulcer , and the presence of distant metastasis . The poor prognostic indicators on histology include poor differentiation, invasion of reticular dermis or deeper structures and a vertical thickness of the tumour >4mm.

The prevention of Marjolin's ulcer is very important in view of its aggressive and rapidly spreading nature, thereby posing a challenge to plastic and reconstructive surgeons. Early excision and skin grafting of deep burns and other wounds that possess chronic features should be covered with skin graft or flap cover. The provision of wound cover to a chronic wound will help to reduce the incidence of Marjolin's ulcer among our patients.

CONCLUSION

Marjolin's ulcer is a preventable problem considering its morbidity and mortality. The cornerstone of its prevention is early wound excision and skin grafting in the early phase of deep burns or other wounds that could be chronic.

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