American Journal of Case Reports

ISSN 1941-5923
© Am J Case Rep, 2016; 17: 111-114
DOI: 10.12659/AJCR.896352

Received: 2015.10.19
Accepted: 2015.12.14
Published: 2016.02.22

Marjolin's Ulcer Complicating a Pressure Sore: The Clock is Ticking

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

CDEF 1 Kamran Khan
CDEF 2 Anna Lucia Giannone
F 3 Erfan Mehrabi
F 4 Ayda Khan
E 5 Roberto E. Giannone

1 Department of General Surgery, Sinai Hospital of Baltimore, Baltimore, MD, U.S.A.
2 Aureus University School of Medicine, Oranjestad, Aruba
3 Department of Pediatrics, Harbor Hospital, Baltimore, MD, U.S.A.
4 Department of Biology, Hofstra University, Hempstead, NY, U.S.A.
5 Surgery Private Practice, Anzoátegui, Venezuela

Corresponding Author: Kamran Khan, e-mail: kamkmd92@gmail.com
Conflict of interest: None declared

Patient: Male, 85
Final Diagnosis: Marjolin's ulcer (squamous cell carcinoma)
Symptoms: None
Medication: —
Clinical Procedure: Ulcer excision and split thickness skin graft placement
Specialty: Dermatology

Objective: Rare disease

Background: Malignant degeneration in any chronic wound is termed a Marjolin's ulcer (MU). The overall metastatic rate of MU is approximately 27.5%. However, the prognosis of MU specific to pressure sores is poor, with a reported metastatic rate of 61%. This is due to insidious, asymptomatic malignant degeneration, a lack of healthcare provider awareness, and, ultimately, delayed management.

Case Report: An 85-year-old white male was noted by his wound-care nurse to have a rapidly developing growth on his lower back over a period of 4 months.

There was history of a non-healing, progressive pressure ulcer of the lower back for the past 10 years. On examination, there was a 4×4 cm pressure ulcer of the lower back, with a superimposed 1.5×2 cm growth in the superior region. There was an absence of palpable regional lymphadenopathy.

Punch biopsy revealed squamous cell carcinoma consistent with Marjolin's ulcer. The ulcer underwent excision with wide margins, and a skin graft was placed. Due to the prompt recognition of an abnormality by the patient's wound-care nurse, metastasis was not evident on imaging. There are no signs of recurrence at 1-year follow-up.

Conclusions: Marjolin's ulcer has a rapid progression from local disease to widespread metastasis. Therefore, it is essential that wound-care providers are aware of the clinical signs and symptoms of malignant degeneration in chronic wounds.

MeSH Keywords: Carcinoma, Squamous Cell • Inflammation • Pressure Ulcer

Full-text PDF: http://www.amjcaserep.com/abstract/index/idArt/896352

Background

Marjolin's ulcer (MU) describes any chronic wound undergoing malignant degeneration. In the literature, this has been said to occur in 1.7% of chronic wounds [1]. The setting is typically osteomyelitis and burn scars. MUs are most commonly squamous cell carcinoma; however, the incidence of squamous cell carcinoma in pressure sores has been reported to be as low as 0.5% [2].

We present a rare case of squamous cell carcinoma diagnosed in a patient with a long-standing pressure ulcer. This report demonstrates the rare, but important, association between chronic wounds and malignancy. Also demonstrated is the sequence of diagnostic steps necessary to reach a swift diagnosis. It is essential that wound-care providers are aware of the clinical signs and symptoms of malignant degeneration in chronic wounds.

Case Report

An 85-year-old white male was noted by his wound-care nurse to have a rapidly developing growth on his lower back over a period of 4 months.

There was history of a non-healing, progressive pressure ulcer of the lower back for the previous 10 years. He sustained a spinal cord injury at the age of 51, and was completely paralyzed in the lower extremities. There were no known medical conditions. The patient was born in Italy, but had resided in Venezuela for the past 20 years. There were no known sick contacts, pets in the household, or insect bites. The patient did not smoke, drink alcohol, or use illicit drugs. He consistently followed a healthy diet and lifted weights daily. There was a strong family history of skin cancer, and he was not taking any medications.

On examination, the patient was afebrile and normotensive. There was a 3.5×4 cm pressure ulcer of the lower back, with a superimposed 1.5×2 cm growth in the upper aspect (Figure1). There was an absence of palpable regional lymphadenopathy. Laboratory workup did not reveal leukocytosis and electrolytes were within normal limits. A complete blood count with differential revealed normal values. Additionally, the patient had a good nutritional status.

Under suspicion of malignancy, 2 punch biopsies of the wound edge and wound bed were taken. Histopathological examination revealed non-infiltrating, well-differentiated squamous cell carcinoma consistent with MU. There were nests of hyperchromatic squamous epithelial cells arising from the epidermis, without extension into the dermis. The ulcer was excised

Figure 1. Marjolin's ulcer: A 3.5×4 cm ulcer of the lower back with a superimposed 1.5×2 cm growth in the superior region.

with 2-cm margins and a split-thickness skin graft was placed. Metastasis was not evident on imaging; therefore, chemoradiation therapy was deemed to be unnecessary.

Most recently, the patient's wound has healed well and there are no signs of recurrence at 1-year follow-up.

Discussion

Malignant degeneration in any chronic wound is termed an MU [3]. This was first described in 1828 by Jean-Nicholas Marjolin as a malignant transformation of chronic healing, resulting from burn injuries [4].

In the literature, malignant degeneration has been reported to occur in 1.7% of chronic wounds [1]. Examples include burn scars, chronic draining sinuses due to osteomyelitis, and pressure ulcers; burns being the most common. MU may develop in various anatomical locations, including the lower extremity (53.3%), upper extremity (18.7%), and trunk (12.4%) [5]. The predilection of these lesions may be due to injuries that affect the arms and legs (trauma, burns, venous stasis ulcers, and osteomyelitis) [5]. The latency period for malignant transformation can be accelerated or take decades [2].

The incidence of squamous cell carcinoma specific to pressure sores has been described in the literature [2,6–12]. However, this is rare, and the incidence has been said to be as low as 0.5% [2]. One case described the development of MU 2.5 years

Table 1. Clinical indications of malignant degeneration.

Chronic ulceration >3 months [8]
Protracted course or increase in size despite treatment [4,8,9]
Malodorous discharge [1,8]
Excess granulation tissue extending beyond ulcer margins [1,8]
Irregular base or margin [1,8,9]
Change in wound drainage [1]
Excess bleeding [1,8,9]
Exophytic growth [1,9]
Regional lymphadenopathy [9]

after surgical excision and successful closure of a sacral pressure sore [8]. Cases similar to our patient, involving paraplegic and tetraplegic individuals, have also been described [2,10,11]. Ellitsgaard et al. recommended admittance of paraplegic and tetraplegic patients with pressure sores to a spinal cord injury center [11].

MUs are most commonly squamous cell carcinoma (75–95%), with other possibilities being basal cell carcinoma, melanoma, and sarcoma [13]. The 2 major morphologic forms are the well-differentiated exophytic form, which generally have a better prognosis, and the poorly-differentiated ulcerative form, which have a poor prognosis due to frequent infiltration. The overall metastatic rate of MU is approximately 27.5% [5]. The metastatic rate in those arising in pressure ulcers has been reported to be as high as 61%, a rate much higher than that resulting from burn scars (38%) and osteomyelitis (14%) [5].

At 3 years post-diagnosis, the overall survival for patients with Marjolin's ulcer is 65–75%, but decreases to 35–50% if there is metastatic disease on presentation [5]. Additionally, palpable regional lymphadenopathy predicts death within 2 years [3]. MU specific to pressure ulcers, however, have been reported to have a 2-year mortality rate as high as 80% in patients with local disease who solely underwent excision [6]. Another author reported a 66% 2-year mortality rate from local or metastatic disease [6].

Numerous interesting theories have been described in the literature as to the pathophysiology behind MU. An increased rate of spontaneous mutations due to prolonged inflammation and repetitive healing attempts has been proposed [2]. It has also been hypothesized that in epithelium of chronic ulcers, there may be a deficiency of innate immunological cells (natural killer cells) that normally counter malignancy. Abnormal cells can then evade immunosurveillance, increasing the risk of metastasis [2].

One study concluded that chronic ulcers present for decades that then undergo malignant degeneration is a disease of developing countries, where patients only present to the physician after complications have developed [14]. Our patient exhibited signs of malignant degeneration via the formation of a superimposed mass that was promptly recognized by his wound-care nurse. The ulcer was in a location unnoticeable by the patient, and with a history of paraplegia he did not experience pain. Of note, the absence of pain may also be seen in chronic MUs without paraplegia. Therefore, heavy reliance was placed on his wound-care provider.

Indications of malignant degeneration include chronic ulceration longer than 3 months, the appearance of a mass, rolled or everted wound margins, excessive granulation tissue, foul-smelling discharge, onset of pain, and change in the characteristics of discharge [2,15,16]. A list of these indications can be seen in Table 1. In the presence of any of these indications, a biopsy should be obtained. A punch biopsy of the wound edge and wound bed were obtained in the present case. Some authors recommend annual biopsies of these ulcers [15]. Another technique includes radical excision and sentinel lymph node biopsy if the patient does not have palpable lymph nodes [2].

The standard treatment for MU is local excision with wide margins; however, there is no clear consensus for resection margins. Upon reviewing the literature, we did not find any randomized controlled trials assessing resection margins for MU. In the literature, 2–4 cm resection margins are suggested [17]. One author found a very low recurrence rate when 3–5 cm margins were used [18]. In clinically node-negative patients, sentinel lymph node biopsy can be useful to assess the further need for chemo-radiation therapy [2]. Additionally, adjuvant chemo-radiation therapy can be used in cases of widespread metastasis. Variable results have been obtained with adjuvant chemotherapy for pressure ulcer carcinomas, and radiotherapy has been used in palliation to treat patients with unresectable disease [6].

The prognosis of MU specific to pressure sores is poor, with a reported metastatic risk of 61%, as stated previously [5]. This is due to insidious, asymptomatic, malignant degeneration, a lack of healthcare provider awareness, and delayed management.

Conclusions

This report demonstrates the important association between chronic inflammation and malignancy. Marjolin's ulcer has a rapid progression from local disease to widespread metastasis.

Therefore, it is essential that wound-care providers are aware of the signs and symptoms of malignant degeneration in chronic wounds. Tissue biopsy, in addition to recognizing the signs of malignant degeneration, is essential for the diagnosis of cutaneous malignancy. This is necessary to reach a swift diagnosis and avoid delayed management before deadly metastasis occurs.

Statement

We have no conflicts of interest to disclose, and no sources of financial support.

References:

1. Trent JT, Kirsner RS: Wounds and malignancy. Adv Skin Wound Care, 2003; 16(1): 31–34
2. Fairbairn NH, Hamilton SA: Management of Marjolin's ulcer in a chronic pressure sore secondary to paraplegia: a radical surgical solution. Int Wound J, 2011; 8(5): 533–36
3. Tobin C, Sanger JR: Marjolin's ulcers: A case series and literature review. Wounds, 2014; 26(8): 248–54
4. Onesti MG, Fino P, Fioramonti P et al: Ten years of experience in chronic ulcers and malignant transformation. Int Wound J, 2015; 12(4): 447–50
5. Kerr-Valentic MA, Samimi K, Rohlen BH et al: Marjolin's ulcer: Modern analysis of an ancient problem. Plast Reconstr Surg, 2009; 123(1): 184–91
6. Stankard CE, Cruse CW, Wells KE, Karl R: Chronic pressure ulcer carcinomas. Ann Plast Surg, 1993; 30(3): 274–77
7. Baskara A, Sikka L, Khan F, Sapanara N: Development of a Marjolin's ulcer within 9 months in a plantar pressure ulcer. Eur J Dermatol, 2010; 20(2): 225
8. Knudsen MA, Biering-Sørensen F: Development of Marjolin's ulcer following successful surgical treatment of chronic sacral pressure sore. Spinal Cord, 2008; 46(3): 239–40
9. Chou CY, Huang ZY, Chiao HY et al: Squamous cell carcinoma arising from a recurrent ischial pressure ulcer: a case report. Ostomy Wound Manage, 2015; 61(2): 48–50
10. Cocchetto V, Magrin P, de Paula RA et al: Squamous cell carcinoma in chronic wound: Marjolin ulcer. Dermatol Online J, 2013; 19(2): 7
11. Ellitsgaard N, Hauge EN, Biering-Sørensen F: Development of carcinoma in chronic pressure sores in patients with spinal cord injuries. Ugeskr Laeger, 1993; 155(19): 1473–74
12. Ceuppens A, Wylock P, De Raeve H: Carcinoma in a pressure sore. Br J Plast Surg, 1997; 50(5): 382–83
13. Hatzis GP, Finn R: Marjolin's ulcer: a review of the literature and report of a unique patient treated with a CO(2) laser. J Oral Maxillofac Surg, 2007; 65(10): 2099–105
14. Smith J, Mello LF, Nogueira Neto NC et al: Malignancy in chronic ulcers and scars of the leg (Marjolin's ulcer): a study of 21 patients. Skeletal Radiol, 2001; 30(6): 331–37
15. Pekarek B, Buck S, Osher L: A comprehensive review on Marjolin's ulcers: Diagnosis and treatment. J Am Col Certif Wound Spec, 2011; 3(3): 60–64
16. Saaiq M, Ashraf B: Marjolin's ulcers in the post-burned lesions and scars. World J Clin Cases, 2014; 2(10): 507–14
17. Iqbal FM, Sinha Y, Jaffe W: Marjolin's ulcer: a rare entity with a call for early diagnosis. BMJ Case Rep, 2015; 2015: pii: bcr2014208176
18. Bozkurt M, Kapi E, Kuvat SV, Ozekinci S: Current concepts in the management of Marjolin's ulcers: outcomes from a standardized treatment protocol in 16 cases. J Burn Care Res, 2010; 31(5): 776–80