Squamous Cell Carcinoma Showing Rapid Metastasis after Leg Amputation due to Chronic Osteomyelitis

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INTRODUCTION

Marjolin’s ulcer is defined as a squamous cell carcinoma that arises from chronically traumatized or inflamed skin. This malignant transformation is most commonly originated from the sites of non-healing wounds, including osteomyelitis, burn scars, pressure sores, venous stasis ulcers, and skin graft sites. Carcinomatous changes from chronic ulcers are estimated at 2.2%. The prevalence of Marjolin’s ulcer, arising in chronic osteomyelitis, is variable, but it is thought to be up to 23%. Marjolin’s ulcer tends to be more aggressive than the other forms of skin cancer, with a metastasis rate ranging from 11.5% to 30%.

Since the local excision is associated with high metastatic rates, up to 50% and poor prognosis, the choice of treatment for Marjolin’s ulcers, arising from various underlying diseases, has been an amputation. However, rushed judgment of an amputation of Marjolin’s ulcers before a thorough preoperative evaluation may lead to a rapid metastasis, although, the exact pathogenesis remains unknown. We report a patient with metastatic squamous cell carcinoma showing an abrupt locoregional metastasis, by a lymphatic spread, after the amputation for chronic osteomyelitis.

CASE REPORT

A 56-year-old Korean male was referred to the dermatology department with multiple rapidly growing nodules, which started at the stump of his amputated leg. The patient had an injury to the left foot from a metal nail 30 years ago. He did not seek any medical care for the traumatic lesion because there was no change in the lesion and the lesion showed neither symptoms nor any discharge. Two years ago, he visited an orthopedic clinic since the wound aggravated, with the appearance of ulceration and pain. He did not have any past history of other diseases or medications. Physical examination revealed a chronic ulcer on the left lower leg, without any associated skin lesions or palpable lymph nodes. The lesion was clinically diagnosed as
a chronic osteomyelitis. Since conservative management of the lesion failed, surgical amputation at the below-knee level was subsequently recommended. Biopsies or preoperative evaluations, such as computed tomography (CT), magnetic resonance (MR), and positron emission tomography-computed tomography (PET-CT) were, however, not performed before the amputation. Histology of ulcer revealed solid nests of atypical squamous cells with keratinization from the ulcer, which was consistent with squamous cell carcinoma of Marjolin’s ulcer. Unfortunately, pre-evaluation for detecting locoregional metastasis was not performed. A few months after the amputation, multiple suppurative ulcers and nodules, near the amputation stump, appeared and rapidly spread. He was, thereafter, referred to our department when physical examination revealed multiple coin-sized, erythematous, non-healing ulcers and soft nodules on the left thigh, in addition to the stump of the amputated leg (Fig. 1A). Palpable lymph nodes were also noted near the inguinal area. Biopsy of a representative lesion revealed numerous keratinized large atypical cells forming nests. All of these cells had abundant cytoplasm and abnormal nuclei (Fig. 2). PET-CT demonstrated multiple foci of abnormally increased FDG uptake in the soft tissue of the left thigh, and in the stump of the amputated leg, which was consistent with a metastatic squamous cell carcinoma with malignant lymphadenopathy (Fig. 1B, C). The patient was diagnosed with metastatic squamous cell carcinoma, which had spread rapidly after the amputation procedure of Marjolin’s ulcer from chronic osteomyelitis.

**Fig. 1.** Photograph and fluorodeoxyglucose positron emission tomographic (FDG PET) scan (coronal view) of the patient. (A) Metastatic squamous cell carcinomas on the left thigh and stump of the amputated leg. FDG PET scans demonstrating hypermetabolic foci along the lymphatic drainage site (B) of the left groin and upper part of ipsilateral thigh as well as (C) lower part of the thigh and stump site.

**Fig. 2.** (A) Diffuse lattice-like infiltration of squamous cell carcinoma infiltrating in the dermis. (H&E, ×40), (B) Highly pleomorphic dedifferentiated epithelial cells in the dermis (H&E, ×200).