

Case Report

Squamous cell carcinoma on the dorsal aspect of foot: a case report and literature review

Rutu S. Raval¹, Jaydip R. Kavthiya², Bijal H. Prajapati^{2*}

¹GMERS Hospital and College, Vadodara, Gujarat, India

²Department of General Surgery, GMERS Hospital and College, Vadodara, Gujarat, India

Received: 12 March 2023

Accepted: 11 April 2023

*Correspondence:

Bijal H. Prajapati,

E-mail: bijalprajapati230@gmail.com

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ABSTRACT

Squamous cell carcinoma (SCC) is a rare condition of the foot. Its incidence has been described as roughly 0.6 to 3.0%. The disease was first described in 1828 by Marjolin, and its malignancy was recognized by Dupuytren. SCC originates in keratinocytes and may develop from a precursor lesion or de novo lesions. A case report of the occurrence of metastatic squamous cell carcinoma of the foot is presented. This metastatic lesion developed following trauma. The patient presented with a painful, ulcerative, non-healing wound on the dorsum of the left foot. A case study of squamous cell carcinoma on the dorsal aspect of the foot was done. Fine-needle aspiration of the lymph node and wedge biopsy of the lesion documented it as metastatic squamous cell carcinoma that was managed eventually by below-knee amputation. The clinical significance of our case study highlights the need for any non-healing wound to be viewed with suspicion and to assist in the prognosis, diagnosis, and management of patients with SCC along with a review of pertinent literature. In addition, this study has shown that early diagnosis and treatment are of vital importance to decrease the risk of recurrence and metastasis.

Keywords: Carcinoma, squamous cell, Foot, Amputation, Metastasis

INTRODUCTION

Squamous cell carcinoma (SCC) is relatively rare in the foot. It is the second most common form of aggressive skin cancer. In broad terms, affected patients are usually light-skinned individuals, in their 50s and 60s, and the disease affects men more frequently than women, at a ratio of 3:1.³ It is commonly associated with chronic exposure to ultraviolet radiation (UV-B), in immunosuppressed individuals, from a precursor lesion like actinic keratosis, Marjolin's ulcer or may be secondary to chronic inflammatory or degenerative processes (such as scars from trauma or burns, osteomyelitis, fistular sinuses, ulcers), and exposure to radiation, tobacco, smoke, and chemicals like arsenic.⁴ The presentation can be either a proliferative or an erosive lesion. The clinical appearance is variable ranging from a nodule, an area of induration,

ulceration, or an exophytic, cauliflower-like growth.⁶ Although, most cases are curable, tumors may recur or metastasize. Histopathology is usually diagnostic. Magnetic resonance imaging is adjuvant in the diagnosis of squamous carcinoma of the foot. The degree of differentiation of squamous cell carcinoma, as well as the size and depth of tumor invasion, are extremely important prognostic variables.

CASE REPORT

A 61-year-old male from Vadodara, Gujarat, India presented to the surgery clinic with a chronic, painful, non-healing, ulcerative, left foot wound. The wound had been present for a year as a result of trauma during farming. The lesion was initially small that exhibited a gradual change in appearance and an increase in size. It later became

infected after self-debridement and self-application of home remedies such as the application of mud, turmeric, and leaves over it. He got the lesion evaluated by his primary care physician and multiple courses of oral antibiotics were prescribed that failed to resolve the lesion. His past medical history consisted of chronic smoking (40 pack years). On physical examination, the patient was conscious, cooperative, and well oriented, to time, place, and person. The patient was vitally stable. A single, mobile, non-tender, firm inguinal lymph node of 3×2 cm size was palpable over the left inguinal region and fine-needle aspiration was documented as having- atypical squamous cells having mild to moderate pleomorphism, high N: C ratio, hyperchromasia, with eosinophilic cytoplasm, irregular nuclear membrane and inconspicuous nucleoli with giant cells, suggestive of epithelial malignancy.

There were no signs of icterus, pallor, clubbing, edema, or cyanosis. Systemic examination was normal. Local examination revealed a single, tender, irregularly shaped ulcer on the dorsum of the left foot, measuring 5×3×1 cm in size with inflamed and oedematous margins and a punched-out edge. The floor rests on the underlying structures. Mild serosanguinous discharge from the ulceration was seen, but otherwise, no acute signs of infection were present. No structural deformity was noted and neurovascular status was intact (Figure 1).

In other baseline routine investigations, LFT and RFT proved to be non-contributory to the following case. The patient was non-reactive for HIV I and II and tested negative for anti-HCV, and HBsAg. The chest X-ray and ECG was normal. Radiographs of the foot showed increased soft tissue density (Figure 2). An initial wedge biopsy was performed and the formalin-fixed specimen was sent for histopathological evaluation which revealed hyperplastic stratified squamous epithelial lining with hyperkeratosis. Underlying fibro collagenous stroma showed invasion by atypical squamous cells and the presence of keratin pearls with chronic inflammatory infiltrates and areas of hemorrhage, suggestive of well-differentiated squamous cell carcinoma (Figure 3).

HRCT chest was done to rule out pulmonary metastasis which yielded no evidence of nodules/ consolidation or ground glass opacity in bilateral lungs and no abnormally enlarged hilar or mediastinal lymph nodes. The above clinical history and investigational findings were found to be consistent with the - metastatic epithelial malignancy - squamous cell carcinoma. A below-knee amputation surgery was planned.

Operative notes

A formal below-knee, end-bearing amputation was carried out by using a Burgess long posterior flap incision with a scar placed over the anterior aspect to form the stump with

a round, gentle contour and adequate muscle padding. All sterile precautions were used.

Proper painting and draping were done. A skin incision at anterior 2/3rd circumference of leg, 9 cm from tibial tuberosity and a posterior skin incision at 1/3rd circumference of leg, 9 cm distal to above incision was made. Amputation was carried out by cutting tibia at the level of proximal skin incision and cutting fibula 2 cm proximal to cut end of tibia. Flap closure was done by myoplasty of agonist and antagonist muscles to cover the cut end of tibia bone by interrupted Vicryl 2.0 suture. Myofacial closure followed by skin closure was done with ethilon. Suture in an interrupted fashion. A sterile conical dressing was placed. Post-operatively the patient recovered without complications, and a clean dried dressing over the stump was done regularly (Figure 5). The necessary antibiotics, anti-inflammatory, and analgesics were prescribed. The patient was sent for physiotherapy and rehabilitation and was discharged from the hospital with weekly follow-ups and dressing changes. Figure 5 and 6 show the patient's recovery, 2 weeks, and 2 months post-operatively without any complications.

Table 1: Routine blood investigations.

Variables	Values
Hemoglobin (g/dl)	12.9
RBC (million/cumm)	3.47
WBC (cumm)	9100
Platelet count (cumm)	252000
S. creatinine (mg/dl)	0.9
Albumin/globulin ratio	2:1



Figure 1: Ulcerative lesion over the dorsum of left foot.



Figure 2: Radiographs of left foot.

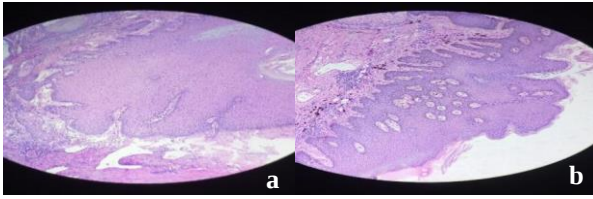


Figure 3: Hyperplastic stratified squamous epithelial lining with hyperkeratosis; (b) stromal invasion by atypical squamous cells and the presence of keratin pearls.



Figure 4: Immediate post-operative image of the stump.



Figure 5: Post-operative recovery images with suture removal at 2 weeks and 2 months respectively.

DISCUSSION

Squamous cell carcinoma originates from the squamous cell epithelium of the epidermis and may show varying degrees of differentiation and keratinization.⁴ The diagnosis is based on a high index of suspicion. Any changes in color, shape, or size, or sudden onset of pain in benign lesions of the foot should raise concerns about possible malignancy. Furthermore, particular attention is recommended for any chronic lesion that has difficulty healing.

High-risk patients are commonly described as those that have lesions that are often diagnosed late, >2 cm in size, indistinct clinical borders with rapid growth, local metastases, >4 mm depth, and poor degree of differentiation of squamous cell carcinoma.¹ An initial incisional biopsy should be performed first for definitive confirmation of the diagnosis. In general, lesions with regular margins should be treated with local excision.

Safety margins of at least 3.0-5.0 mm should be maintained, per the dermatological literature. In more aggressive lesions, it is difficult to establish safety margins, and consequently, more proximal amputation of the foot is indicated. Complete excision of the tumor rarely leads to recurrence.³ Differential diagnosis includes keratoacanthoma, basal cell carcinoma, amelanotic melanoma, pyogenic granuloma, reactive epidermal hyperplasia, and cutaneous Hodgkin's disease.⁵

CONCLUSION

Squamous cell carcinoma of the foot is likely underreported and frequently subject to inappropriate initial treatment. It is rare in Indian patients and fatal if left untreated. Hence, it is incredibly important to diagnose and excise the lesion at an early stage. The clinical appearance of squamous cell carcinoma is variable and the tumor may present as a thin, red, or brown nodule with or without scaling and a focus of induration. MRI is an adjuvant in the diagnosis with histopathology being the gold standard. An initial wide local excision for squamous cell carcinoma of the foot is the treatment of choice and may prevent metastasis. Inadequate excision associated with a recurrence should be treated by amputation. Diagnosis of suspected lesions is done with the help of biopsy and histopathological analysis; while CT imaging and lymph node biopsies aid in ruling out metastatic diseases. The preferred mode of treatment is surgical excision with skin grafting or flap. Radiation therapy is used in cases of squamous cell carcinoma in older patients or those who will not tolerate surgery, or when it has not been possible to obtain clear margins surgically. Adjuvant radiotherapy is common after surgical treatment in very high-risk tumors. The treatment that offers the highest rate of cure for patients with high-risk primary or recurrent squamous-cell carcinoma is Mohs micrographic surgery. The five-year rate of cure in patients with large tumors is 70%, regardless of the treatment chosen. Although most cases are curable, the risk of metastases and recurrence continues to remain high due to late diagnosis. Thus, a chronic, non-healing lesion needs to be viewed with suspicion that will aid in early diagnosis and treatment.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Raval RS, Kavthiya JR, Prajapati BH. Squamous cell carcinoma on the dorsal aspect of foot: a case report and literature review. *Int Surg J* 2023;10:953-6.