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Digital Squamous Cell Carcinoma: Case Report and Review of Literature

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Squamous cell carcinoma (SCC) is one of the most common primary malignancies affecting the upper limb and especially the hand. Digital SCC is infrequently reported in the literature and presents a diagnostic challenge because of its relatively rare occurrence and mimicry of benign conditions. Many risk factors have been identified including immuno suppression, Human Papilloma Virus (HPV), trauma, chronic scars, and exposure to radiation and carcinogens. Treatment varies from Mohs micrographic surgery to amputation.

After review of literature, rates of recurrence and metastasis seem to be higher for SCC affecting the hand compared to other sites and digital SCC has a high rate of recurrence with a low metastatic rate.

Through this paper we report the case of a 70-year-old woman with SCC of the fourth right finger that extended from the proximal nailfold to the ventral finger, and we aim to highlight the importance of an early diagnosis, leading to an early treatment which is the only guarantor of an effective treatment with digit preservation and good function.

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Keywords: Squamous cell carcinoma; hand; digits; amputation; hand surgery.

1. INTRODUCTION

Squamous cell carcinomas (SCC) appear to be the most common skin malignancy of the hand [1]. In contrast, digital SCC is relatively rare [2]. Lesions are often misinterpreted as common benign conditions, leading to delayed diagnosis. A wide range of treatment options is available, from Mohs micrographic surgery technique to amputation, passing by wide excision with adequate margins. Digit preservation and good function is an important consideration, however, this may not be achievable following wide excision of the SCC and in case of bone invasion, leading to amputation of the finger [3]. The prognosis for patients with digital SCC is usually favorable following treatment of the cancer [2].

2. CASE REPORT

A 70-year-old diabetic woman was seen for treatment of a voluminous ulcerating keratotic and circumferential mass developed at the expense of the distal part of the right fourth finger. She was right handed and worked as a housemaid for 40 years. The tumor has been evolving since 6 months. It was first developed from the proximal nailfold with an intact nail plate and then has expanded circumferentially to cover all the distal phalange and the palmar face of the distal interphalangial joint (Fig. 1a, 1b). She didn't report any loss of weight or deterioration of general condition. There was no regional lymphadenopathy, and no metastasis was identified at the initial assessment.

The radiographic study of the involved digit revealed an important invasion of the soft tissues and the bone; third phalange and distal interphalangial joint (DIPJ) (Fig. 2).

The medical history taking revealed no history of radiation or exposure to carcinogens.

A biopsy specimen of the tumor area revealed an invasive well-differentiated squamous cell carcinoma. Because of the size of the tumor, its location, the age of our patient, added to the unavailability of the Mohs micrographic surgery technique, we favored to amputate the fourth through the first phalange (Fig. 3).

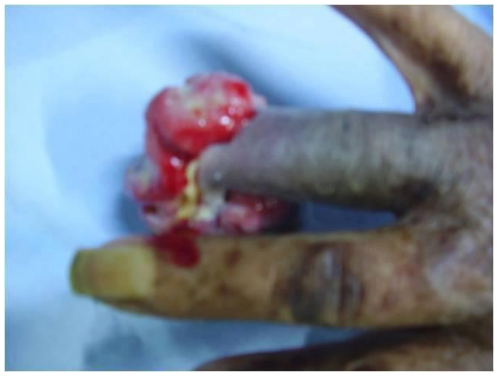

Fig. 1a. Dorsal view of the tumor of the fourth right finger

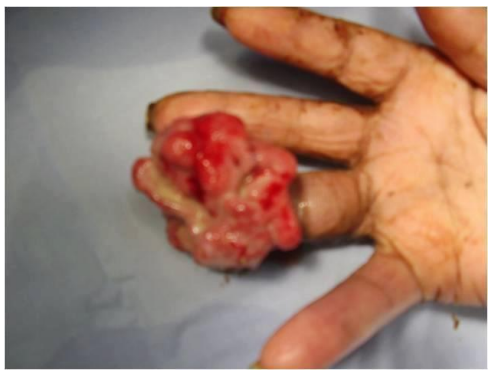

Fig. 1b. Palmar view of the tumor of the fourth right finger

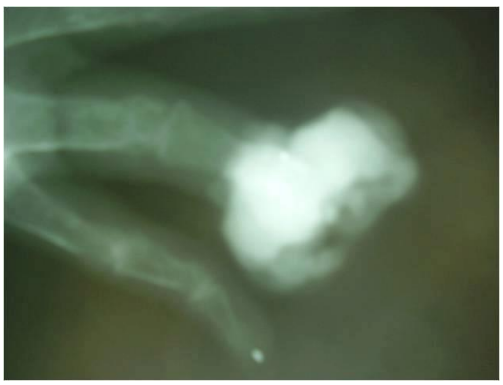

Fig. 2. X-ray image of the tumor invading soft tissues, third phalange and DIPJ

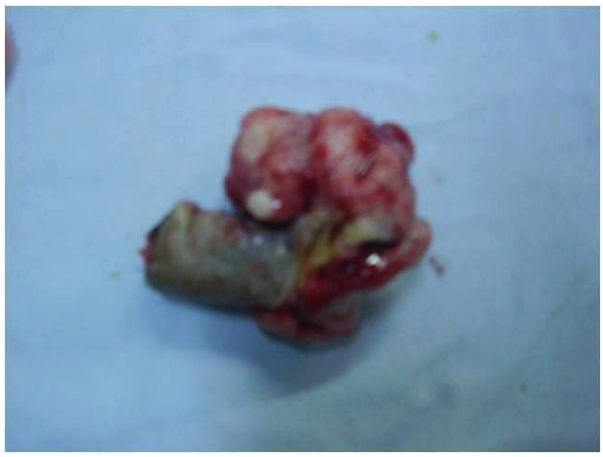

Fig. 3. Distal tip after amputation of the fourth right finger through the first phalange

We didn't perform any adjuvant treatment. Our patient was seen for the last time at one year post-operative and then lost of sight. She was in a good health. The finger amputation stump was well padded and we didn't notice any sign of recurrence or extension of the cutaneous tumor. No regional lymphadenopathy has been noticed.

3. DISCUSSION

Squamous cell carcinoma is one of the most common primary malignancies affecting the upper limb. In a retrospective review of a large cohort of 407 patients with hand skin malignancies at the John Radcliffe hospital, squamous cell carcinoma comprised 78%, basal cell carcinoma 11.3% and melanoma 3.9% [1].

According to the findings of Philip et al. SCC of the dorsal hand is common. In contrast, SCC on the nonsun-exposed ventral fingers is rare [2]. Gormley et al. proved that periungual and distal dorsal finger SCC, often associated with HPV, is only occasionally observed [4]. This is in accordance with the findings of Askari et al., who worked on SCC involving exclusively the hand [4]. Sayed et al. as well, concluded that SCCs involving the dorsum of the hand and the digit occur most frequently. Web space and palmar SCCs are less common [3,5].

Diagnosis may be delayed because the clinical presentation of digital SCC can vary widely and often mimics other more common benign conditions. It typically presents as a periungual, verrucous plaque or subungual nodule, potentially associated with a variety of nail plate changes, such as onycholysis, longitudinal melanonychia, erythronychia, and leukonychia [4].

Several risk factors of digital SCC have been identified after review of literature. SCC of the ventral finger has rarely been described in patients without an apparent tumor-associated risk factor [2].

The main potential causative agent in digital SCC is Human PapillomaVirus (HPV). Although its oncogenic potential and its association with cervical and anogenital cancers has been well established, the role of HPV in development of cutaneous SCCs remains less clear. SCCs of the distal digit and periungual skin, however, appear to be an exception, with mounting evidence to suggest that SCCs in this location are overwhelmingly associated with the mucosal oncogenic HPV subtypes [6,7]. Gormley et al. proved that although low-risk human papillomavirus (HPV) subtypes are commonly associated with benign digital verrucae, digital SCC can be associated with high-risk, oncogenic HPV subtypes including HPV-16, -33, -51, and -73. The majority of reports linking HPV and digital SCCs have implicated the HPV-16 subtype [4].

Added to the previously documented risk factors for SCC including chronic scars, chronic ulcers, radiation therapy and exposure to ultraviolet light, many other risk factors have been observed especially in individuals with digital SCC. We mention the exposure to carcinogens like arsenic, polycyclic hydrocarbons, grease and oil, as well as some congenital conditions like epidermolysis bullosa, Huriez syndrome and syndactyly [2,3]. Recurrent bacterial or viral

infections and antecedent of trauma are potentially involved in the occurrence of digital SCC. Immunosuppression, whether it is congenital or acquired after HIV infection or following organ transplant, may also increase the risk of digital SCC [2,4].

Multiple treatment options exist for SCC of the hand. Wide surgical excision is indicated with 4 mm margins for tumors with a diameter of less than 2 cm, and 6 mm margins for those larger than 2 cm or with less favorable grade [6]. Askari et al. noted a reduction in the recurrence rate when reconstruction required a flap or skin graft compared with primary closure, and this suggests the importance of wide margins during primary excision to decrease recurrence, as flaps and grafts tend to be used in cases involving large resections [5].

For SCCs involving only soft tissue, Mohs micrographic surgery offers the highest cure rates [4]. It has been suggested to decrease recurrence and metastasis rates, but this wasn't noted in Askari et al. study where no significant difference in overall survival or recurrence rates was found for lesions treated with Mohs surgery or wide excision [5]. Furthermore, this technique is not routinely available as in the case of our department. Biopsy specimens with PCR-based detection of HPV could be performed alongside that of Mohs surgery to remove both tumor and HPV infection in order to reduce the risk of recurrence, but access for facilities suitable for HPV testing may be limited [3]. An additional surgical stage beyond the tumor-free plane at completion of Mohs micrographic surgery may be reasonable [4].

Amputation is the treatment of choice for bony invasion [4] like in the case of our patient, and may be discussed under certain instances to reduce the risk of recurrence [3].

The role of sentinel lymph node biopsy (SLNB) in treatment of SCC of the hand remains controversial. Several reports have suggested that SLNB may be useful in cases of high-grade tumors, perivascular or perineural invasion, increased depth, or history of recurrence [7,8]. In Askari et al. study, 4 patients underwent SLNB. All had clinical lymphadenopathy and 2 had positive nodes. One of the 2 eventually had formal lymphadenectomy, but it is unclear whether this was beneficial to overall survival [5]. With no conclusive evidence in the literature that routine SLNB produces a survival benefit for hand SCC, SLNB may be appropriate only in cases of clinical lymphadenopathy or large tumors (> 2 cm), both of which are linked to a higher risk of lymph nodes metastasis [9,10].

Patients should be counseled appropriately and informed that close follow-up should be observed alongside that of self-surveillance for recurrence or indeed signs of metastasis [3].

Rates of recurrence and metastasis are higher for SCCs affecting the hand as compared to other body sites [3]. Askari et al. report recurrence rates of 50% at 10 years and metastasis rates of 2% at 20 years [5]. Schaivon et al. report recurrence rates of 22% at 9 years and a metastatic rate of 28% at10 years following wide local excision or amputation of SCCs involving the hand [11].

Furthermore, different regions of the hand seem to have different prognosis; SCC occurring in the web spaces or on the dorsum of the proximal phalanges are more sinister malignancies with a greater propensity for metastatic spread [1]. According to the findings of Sayed et al., SCC affecting the nail unit has a high recurrence and a low metastatic rate, whereas, SCC involving the palm and web spaces are aggressive and this is true despite amputation of the affected site [3]. The high rate of recurrence of digital SCCs may be a result of persistence of oncogenic HPV at the margins of resection. Thus, aggressive treatment of individual lesions and of genital reservoirs for HPV on patients and their sexual partners is warranted [4]. Given this association between HPV and digital SCC, it would be interesting to introduce a screening algorithm in order to predict early development of this type of cancer. An early diagnosis leads to an early treatment which is the only guarantor of an effective treatment with digit preservation and good function.

4. CONCLUSION

Digital SCC is a relatively rare tumor and presents a diagnostic challenge because of its relatively rare occurrence and mimicry of benign conditions [4]. A range of treatment options exist for its management, from Mohs micrographic surgery to amputation, which is indicated under certain instances [3]. A regular and prolonged follow-up is imperative to detect potential signs of recurrence or metastasis. Future studies should focus on the role of SLNB in improving overall survival and decreasing recurrence [5].

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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