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Our Experience with the Management of Cutaneous Squamous Carcinoma in COVID-19 Pandemic Period

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Abstract

Traditionally, skin cancers have been divided into two major groups: melanoma, and non-melanoma skin cancer (NMSC). Squamous cell carcinoma (SCC) is the second most common skin cancer in individuals of White European ethnicity and is preceded in frequency by basal cell carcinoma (BCC). Squamous cell carcinoma is estimated to have a lifetime incidence of 7–11% in the USA; whereas that of BCC is 28–33%. 1 Other NMSCs include cutaneous lymphoma, Kaposi's sarcoma, Merkel cell carcinoma, and other sarcomas. Together, these account for<1% of NMSCs. Factorsthat increase the risk for SCC include Fitzpatrick skintypes I and II (usually White individuals), outdoor occupations (farming, construction work), and exposure to human papillomavirus (HPV) types 16, 18, and 31.2 Exposure to ultraviolet (UV) radiation and sunlight is the greatest risk factor. Here we present a case of SCC in a post burn scar patient with underlying Covid-19.

Keywords: Cutaneous Squamous Cell Carcinoma, Covid-19 Pandemic.

INTRODUCTION

The average age of onset of cutaneous SCC in the USA isthe mid-sixth decade of life.[1] Individuals may be as youngas 20–30 years of age in regions such as Australia, Florida, New Zealand, and southern California. The disease has a predilection for males, but the incidence of SCC originating on the legs is greater in females. Exposure to ultraviolet (UV) radiation and sunlight is the greatest risk factor. Overall, SCC is uncommon in dark-skinned individuals, but it is the most common cutaneous cancer in African Americans. In such individuals, the cancer usually occursin areas that are not sun-exposed.[3] Darkly pigmented skin possesses greater amounts of melanin in the epidermis, which protects against the carcinogenic effects of UV light. An SCC that arises from a burn wound is known as a Marjolinulcer, an occurrence that was first described by Jean-Nicolas Marjolinin 1828.

COVID-19 is caused by a single stranded ribonucleic acid (sRNA) virus associated with severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) which was first detected in Wuhan, Hubei province in China in December 2019.[4] A detailed, complete comprehensive and robust infection work flow for a COVID-19 case had been proposed most recently.[5,6] Practical guidance was missing, until March 26, 2020 the Inter collegiate General Surgery

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Guidance on COVID-19 and updated it on March 27, 2020.[7] The objective is to take responsibility to provide guidance for surgery in the COVID-19 crisis in a more practical way addressing practice, healthcare staff and patient safety. Here we share our experience in managing a covid-19 patient with SCC.

MATERIAL AND METHODS

This study was conducted in the Department of Plastic Surgery in a tertiary care institute. Informed consent was obtained from the patient under study. Department scientific committee approval was obtained. It is a single center, non-randomized, non-controlled study. The patient under study was a 40-year old male (Figure 1) with no other known comorbidities. Patient was analyzed systematically and was found to have a ten years old non healing ulcer on the right posterior back close to the midline. The ulcer edges were everted and bled on touch. The ulcer was situated on a 10 years old burn scar. Wide excision was done. Wound bed was prepared in accordance with TIMERS concept mentioned in the guidelines, the ulcer was serially assessed and documented according to Bates–Jensen wound assessment tool. Non-viable necrotic tissue was managed with series of surgical debridement including, low level laser therapy (Figure 2), collagen and platelet rich plasma application (Figure 3), and a transposition flap (Figure 4). Infection was managed with local antimicrobials & antibiotics according to culture sensitivity. A tissue excision biopsy was confirmed to be SCC (Figure 5). A work up was done for possible metastasis. Patient was positive for Covid-19 therefore, standard Covid-19 protocol treatment guidelines, in which patient was kept in the Covid-19 isolation ward. Patient was tested negative after 3 weeks and management of SCC recommenced.

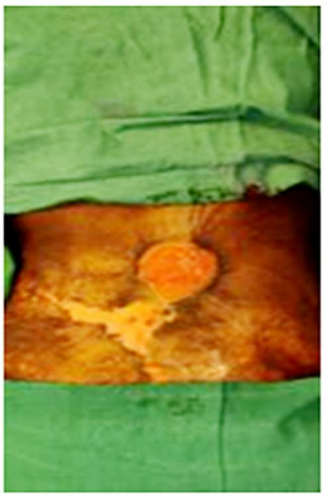

Fig. 1: Ulcer on presentation

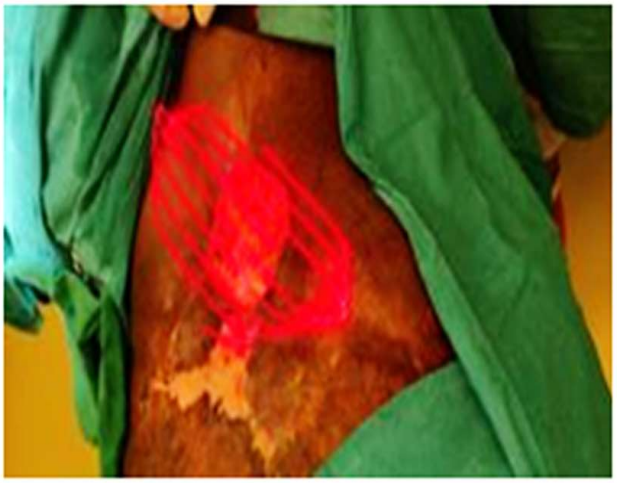

Fig. 2: Low level Laser therapy

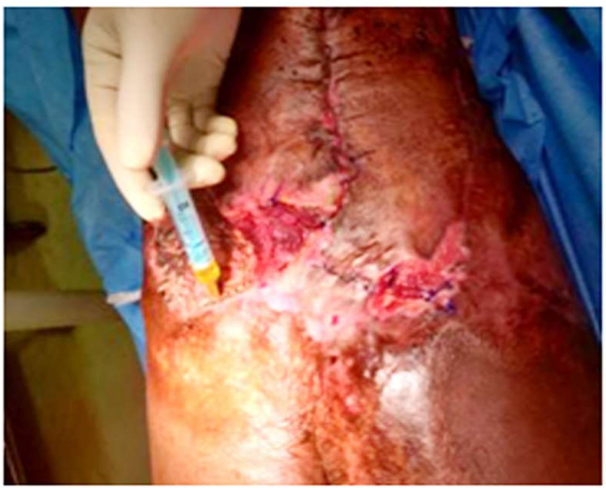

Fig. 3: Autologous platelet rich plasma

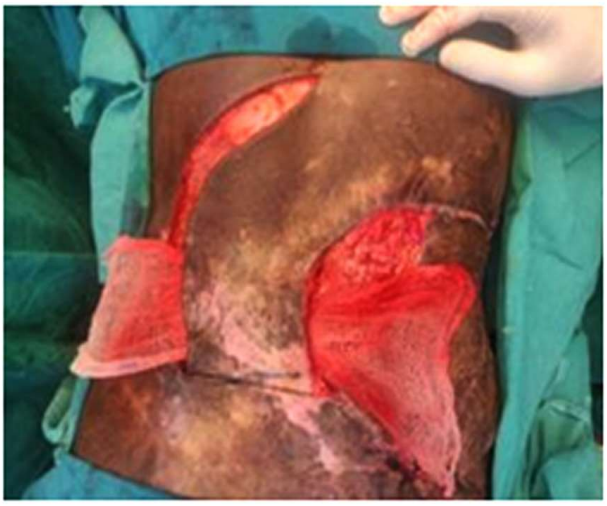

Fig. 4: Transposition Flap

Fig. 5: Excision biopsy specimen

RESULTS

Wound bed gradually improved, clinical decision was taken to reconstruct with flap and subsequent skin grafting (Figure 6) Patient is stable, wound healed well but scar management yet to complete. He is discharged at request, however will return for admission. Radiotherapy is planned for him in the immediate date of return to hospital.

Fig. 6: Skin Grafting

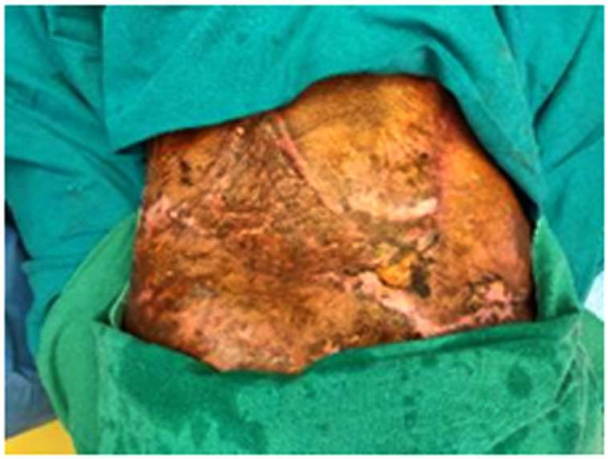

Fig. 7: Wound on discharge

DISCUSSION

Malignant transformation of normal epidermal keratinocytes is the hallmark of SCC. One critical pathogenic event is the development of apoptotic resistance through functional loss of TP53, a well-studied tumor suppressor gene. TP53 mutations are seen in over 90% of skin cancers diagnosed in the United States, as well as in most precursor skin lesions, suggesting that loss of TP53 is an early event in the development of SCC. UVR causes deoxyribonucleic acid (DNA) damage through the creation of pyrimidine dimers, a process known to result in the genetic mutation of TP53. Upon subsequent UVR exposure, keratinocytes undergo clonal expansion, acquiring further genetic defects, ultimately leading to invasive SCC.

Many other genetic abnormalities are believed to contribute to the pathogenesis of cSCC, including mutations of BCL2 and RAS. Likewise, alterations in intracellular signal transduction pathways, including the epidermal growth factor receptor (EGFR) and cyclo-oxygenase (COX), have been shown to play a role in the development of cSCC.

Squamous cell carcinoma in situ (CIS), sometimes referred to as Bowen disease, is a precursor to invasive SCC. Characteristics of this lesion include nuclear atypia, frequent mitoses, cellular pleomorphism, and dyskeratosis, parakeratosis, and hyperkeratosis.

CIS is differentiated from actinic keratosis, a similar precancerous skin lesion, by the full-thickness involvement of the epidermis in CIS. Invasive SCC is differentiated from CIS and actinic keratosis by the invasion of the basement membrane by malignant-appearing cells. With invasive SCC, nests of atypical cells are found within the dermis, surrounded by an inflammatory infiltrate.

Conventional SCC can be divided into the following four histologic grades, based the degree of nuclear atypia and keratinization found;

- *Well differentiated* - Characterized by more normal-appearing nuclei with abundant cytoplasm and extracellular keratin pearls
- *Moderately differentiated* - Exhibits features intermediate between well-differentiated and poorly differentiated lesions
- *Poorly differentiated* - Shows a high degree of nuclear atypia with frequent mitoses, a greater nuclear-cytoplasmic ratio, and less keratinization
- *Highly undifferentiated* - Shows epithelial cells that may be difficult to distinguish from mesenchymal, melanoma, or lymphoma cells.

CONCLUSION

Squamous cell carcinoma is the second most common type of NMSC. Commonly affected individuals include elderly people, those with UV light exposure, those with light skin types, immunosuppressed subjects, and people with inherited skin conditions. The choice of treatment and follow-up depend on associated risk factors. Factors affecting the metastatic potential of SCC includetumor location, size, duration, depth, differentiation andsubtype, and immunosuppression, recurrence and other comorbidities like covid-19.

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