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Post Burn Squamous Cell Carcinoma

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ABSTRACT

Introduction: Squamous cell carcinoma is the second most common skin cancer, ranking behind basal cell carcinoma. Its incidence is approximately 20–25% of that of basal cell carcinoma. Squamous cell cancer arising in injured areas have a high propensity for metastases and local recurrence.

Treatment options for squamous cell carcinoma are generally divided into excisional therapies and superficial ablative therapies. Tumor location, size, depth of invasion, and histologic differentiation affect treatment choices. All patients with squamous cell cancer require close follow-up to monitor for local recurrence and metastases. The chance of developing a second skin cancer within 5 years after treatment of the original basal cell or squamous cell cancers as high as 50%.

Objective

- To assess the relation between the degree of the burn and skin squamous cell carcinoma cancer.
- To assess the latent period between burn and the developed skin squamous cell carcinoma cancer.
- To assess the incidence of metastasis from skin squamous cell carcinoma after burn, and the mostly site of metastasis.

Materials and Methods: During the study period, fifty patients were targeted from 2200 burn patient who get skin cancer after burn. who were admitted to Al- Amal Oncology Center, Taiz, Yemen, between June 2014 and May 2017.

Patients were eligible for inclusion (Any patient of any age and any gender, who had skin cancer after burn), for an descriptive cross-sectional. excluded based on the presence of synochronouse/ metachronous cancer.

The statistical analysis was performed using SPSS (statistical package for social science), version 25.

Data exhibited in figures and tables and summarized as percentages, frequencies, means and standard deviations.

Results: 50 patients who have SCC from 2200 burn patients examined retrospectively. The number of SCC developing on burn scars among the 2200 burn cases was 50 (2.3%), The mean age was 45 ± 15.5 years, The highest percentage of patients ages was 50% and it was for the age group from 41 to 60 years. Forty-one of fifty SCCs cases with a percentage of 82% had suffered from third degree burns. Thirty of fifty SCCs cases with the percentage 60%, had 5- 10 years as latent Period between burn and carcinoma development. Twenty-nine of fifty SCCs cases with percentage of (58%) did not have metastasis, followed by 21 (42%) had a metastasis. And lung is the most common site of metastasis with about 10 (46%).

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Introduction

Squamous cell carcinoma is the second most common skin cancer, ranking behind basal cell carcinoma. Its incidence is approximately 20–25% of that of basal cell carcinoma, and it constitutes 20% of cutaneous malignancies. More than 100,000 new cases are diagnosed each year [1].

Development of malignant tumors in chronic burn wounds or scars is extremely rare, but a frequently reported complication. Most of these tumors are squamous cell carcinoma and, more occasionally, basal cell carcinoma and malignant melanoma are reported [2].

The association between cancer and burn scars, chronic wounds and ulcers has been well documented since the early 19th century. Numerous studies and case reports have been published on the development of neoplasms in burn scars [3, 4].

Post burn cancer also they are also called Marjolin's ulcers, after Jean-Nicolas Marjolin who first described the development of skin

carcinoma in old burn scars in 1828 [5]. While the factors governing malignant transformation, subsequent recurrence and metastatic spread are not completely understood, several hypotheses have been offered. These include a role of inflammation and irritation in precipitating a cancer, hereditary factors, tissue toxins and co-carcinogens released by the burn, poor vascularization and no lymphatic channels in scars resulting in impaired immunological defense [3, 4].

There are three primary degrees of burns: first-, second-, and third-degree. Each degree is based on the severity of damage to the skin, with first-degree being the most minor and third-degree being the most severe [6]. There are also fourth-degree burns. This type of burn includes all of the symptoms of a third-degree burn and also extends beyond the skin into tendons and bones [6]. First-degree burns are usually treated with home care. Healing time may be quicker the sooner you treat the burn. Second-degree burns are more serious because the damage extends beyond the top layer of skin. This type burn causes the skin to blister and become extremely red and sore. Excluding fourth-degree burns, third-degree burns are the most severe. They cause the most damage, extending through every layer of skin. There is a misconception that third-degree burns are the most painful. However, with this type of burn the damage is so extensive that there may not be any pain because of nerve damage [6].

Compared with first and second-degree burns, third-degree burns carry the most risk for complications, such as infections, blood loss, and shock, which is often what could lead to death. At the same time, all burns carry the risk of infections because bacteria can enter broken skin. Tetanus is another possible complication with burns of all levels. Like sepsis, tetanus is a bacterial infection [7].

Early diagnosis and treatment can prevent squamous cell carcinoma from growing deep and spreading to other areas of the body.

Study Objectives

- To assess the relation between the degree of the burn injury and squamous cell carcinoma.
- To assess the latent period between burn injury and the developed squamous cell carcinoma.
- To assess the incidence of metastasis from squamous cell carcinoma after burn. And determine the mostly site of metastasis.

Material and Methods

During the study period, fifty patients were targeted from 2200 burn patient who get skin cancer after burn. who were admitted to Al- Amal Oncology Center, Taiz, Yemen, between June 2014 and May 2017.

patients were eligible for inclusion (Any patient of any age and any gender, who had skin cancer after burn), for a descriptive cross-sectional. Excluded based on the presence of synochronouse/ metachronous cancer.

In our research, the assessment was based on the clinical examination, tissue biopsy, abdominal ultrasound and Chest CT scan and brain CT scan.

The statistical analysis was performed using SPSS (statistical package for social science), version 25. Data exhibited in figures and tables and summarized as percentages, frequencies, means and standard deviations.

Burns are classified as first-, second-, or third-degree, depending on how deep and severe they penetrate the skin's surface. Latent period in our study defined as the time between burn injury until the time of diagnosed the squamous skin causer by biopsy.

Results

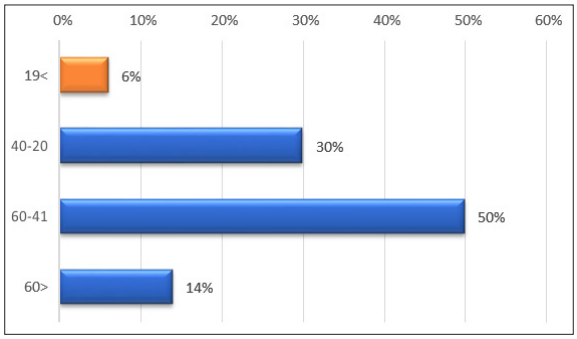

Figure 1: Shows the Distribution of Patients According to age

As the figure shown the patients ages ranged between 12 and 80 years old with mean of 45 ± 15.5 years. The highest percentage of patients ages was 50% and it was for the age group from 41 to 60 years. Followed by the age group from 20 to 40 years with percentage of 30%, then followed by the age group over the age of 60 years and got 14%, followed by the age under 19 years old with percentage of 6%.

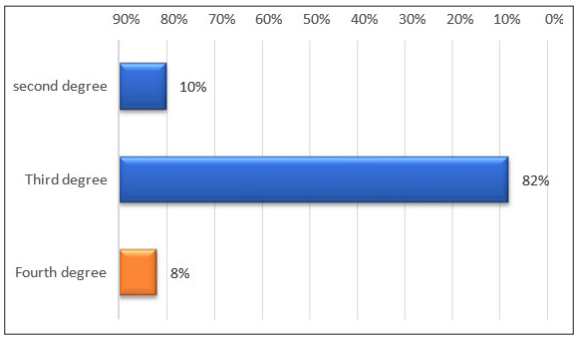

Figure 2: Shows the Distribution of Patients According to burn degree

As the diagram shown, forty-one of fifty SCCs cases with a percentage of 82% had suffered from third degree burns, followed by 5 (10%) had suffered from second degree burns, followed by 4 (8%) had suffered from fourth degree burns.

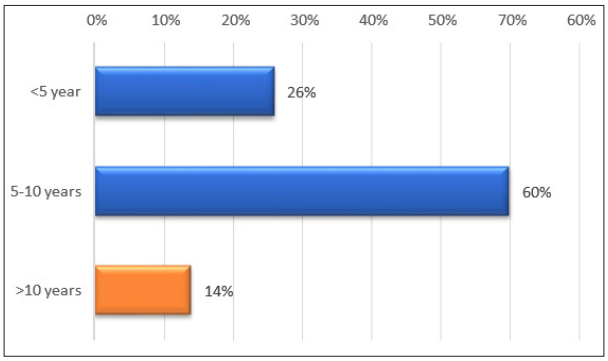

Figure 3: Shows the Distribution of Patients According to Latent Period between Burn and Carcinoma

As the diagram shown, thirty of fifty SCCs cases with the percentage 60%, had 5- 10 years as latent Period between burn and carcinoma development, followed by 13 (26%) had less than five years as latent Period between burn and carcinoma development, followed by 13 (26%) had more than ten years as latent Period between burn and carcinoma development.

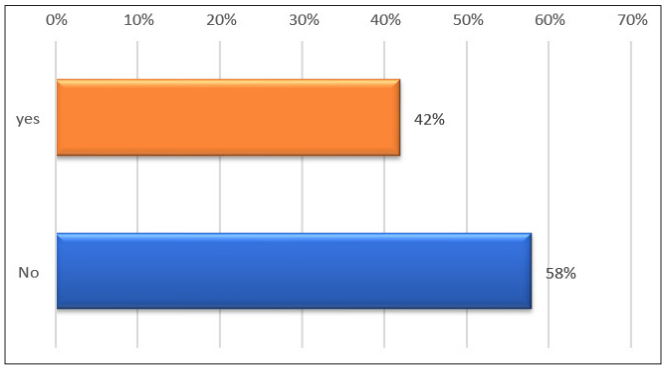

Figure 4: Shows the Distribution of Patients According to Metastasis

As the diagram shown, twenty-nine of fifty SCCs cases with percentage of (58%) did not have metastasis, followed by 21 (42%) had a metastasis.

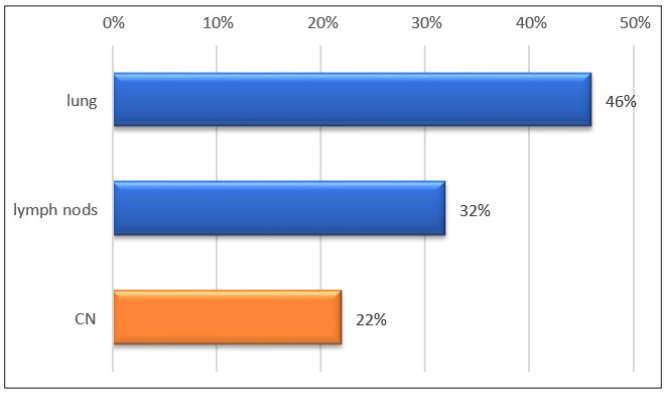

Figure 5: Shows the Distribution of Patients According to Metastasis Place

From the 21 (42%) who had metastasis, 10 (46%) had a metastasis to the lung, followed by 7 (32%) had a metastasis to the lymph nodes, followed by 5 (22%) had a metastasis to the CNs.

Discussion

Scarred or traumatized skin due to ulceration, burns, frostbite, or exposure to arsenic and shale oil is also at an increased risk for developing non melanoma skin cancer. Marjolin's ulcers are aggressive squamous cell carcinomas that arise from old burns or traumatic scars. This has been reported to occur as late as 30 years after the initial injury. About 20% of these patients develop lymph node metastases [8].

Recently an exhaustive review summarized 146 articles between 1923 and 2004, including 1078 cases [14]. Of these, 412 cases reports could be analyzed in detail. Seventy-one percent of the tumors were squamous cell carcinoma (SCC), 12% were basal cell carcinoma (BCC), 6% were malignant melanoma (MM), 5% were sarcoma and 6% were other neoplasms. Furthermore, the mean latency interval between the burn and malignancy was 31 years [3].

Malignant changes in burn scars can be observed at any age [9, 10]. In literature, the average age at diagnosis ranges between 53 and 56 years [10]. SCC originating in burn scars manifests 20–40years after the original burn [10, 11]. Lefebvre et al. found the mean age as 65.14 in their study [12]. In another study, the mean age is found as 53.5 for acute burn carcinoma and 56 years for chronic burn carcinoma [9]. In our study, the average age was found as 45 years, with a latent period of 7.2 years.

About 2.3% of the burn scars undergo malignant transformation to squamous cell carcinoma [2]. In our study, all of our cases had a malignant transformation to SCC.

The exact cause of burn scar carcinoma is still not fully understood, but many studies have examined various factors that may lead to the development of cancer in burn scars. It is widely believed that the repeated formation of ulcers and subsequent healing processes contribute to the malignant transformation [2].

Burns are mostly located around joints and other flexion and extension sites because of repetitive trauma to the scar tissue. Furthermore, they are more prone to malignant transformation. Chronic mechanical irritation, release of local toxins following injury, poor lymphatic regeneration, undernourished state of the burn scar, thickness, and degree of contraction in scars are the other factors that predispose burns to develop carcinoma [13]. Some deletions and mutations in the Fas gene in burn scar SCC have also been identified recently [14, 15].

In Our study, 41 of 50 SCCs (82%) had suffered from third degree of burns, and with the second degree of burns occurring less frequently (10%) and the fourth degree of burns (8%) the least frequent. It shows that the risk of SCC increases with the third degree of burn and decreases with other degrees of burns.

The metastasis rate in SCC is expressed to be 0.5%–15% in different reports [16, 17]. In another study, it was found that metastasis rate as 5.26% in overall SCCs. In burn scar carcinoma, the metastasis is especially related to granulation tissue on scar and the degree of differentiation of tumor, with the rates varying from 15% to 35% [18]. Most of the recurrences and metastases took place within 2 years after the treatment. In our study, we demonstrated the metastasis rate to be 42%, (46%) of them had metastasis to the lung, then (32%) had a metastasis to the lymph nodes, and (%22) had a metastasis to the CNs.

The location of the tumor in the body appears to play a role in its potential to spread to other areas. Tumors located in the lower extremities have a higher likelihood of metastasizing compared to those in other parts of the body (16.18). Specifically, carcinomas found in the lower extremities have a greater tendency to metastasize [17].

When considering wide excision, the appropriate margins have. been already suggested: 4–5 mm for lesions <2cm in diameter and 6–9mm for larger lesions. Tumors at high risk for local recurrence and metastases are those >1–2cm in diameter that have invaded the mid-dermis or deeper. Radiation therapy has been valuable for treating squamous cell carcinoma. Cure rates approach 92% (1).

The chance of developing a second skin cancer within 5 years after treatment of the original basal cell or squamous cell cancers as high as 50%. Careful periodic skin examination is indicated for a minimum of 5 years after diagnosis [1].

Our study revealed that 90% of patients with scar carcinomas had their tumors completely excised with wide margins as the initial treatment. Prophylactic lymph node dissection was not carried out. Patients with metastases received treatment with chemotherapy and/or radiotherapy based on the location of their metastases [19].

The most preferred chemotherapy agents were cisplatin and 5-fluoruracil, especially with a duration of 6 regimens [20].

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