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Analysis of the Epidemiological Profile of Patients with Non-Melanoma Skin Cancer Attended in the 2022 Cancer Campaign in Jundiaí, countryside of São Paulo State

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Abstract

Introduction and Objective: *To determine the epidemiological profile of the community served during the 2022 skin cancer campaign, as well as the histological types and degree of invasion of non-melanoma skin cancers (NMSCs), correlating with data found in the literature.*

Methods: *Descriptive, retrospective, cross-sectional study through the analysis of medical records of patients who attended the 2022 skin cancer campaign at the Dermatology Clinic of Jundiaí Medical School and were diagnosed with non-melanoma skin cancer.*

Results: *55 medical records were analyzed. Most patients were female. Regarding personal history of skin cancer, 29% had a positive history of skin cancer.*

Discussion: *62 biopsy points were performed, identifying 32 cases of NMSC, leading to a total of 1.9 biopsies needed to diagnose and treat one case of skin cancer. The positivity rates for basal cell carcinoma (74.2%) and squamous cell carcinoma (19.3%) provide crucial insights into the effectiveness of initial hypotheses.*

Conclusion: *The results offer important information about the incidence of this type of cancer and can aid in developing more targeted prevention and treatment strategies.*

Keywords: Health Profile, Skin Neoplasms, Disease Prevention, Carcinoma, Basal Cell, Carcinoma, Squamous Cell

Introduction and Objective

Skin tumors are the most common neoplasms in Brazil, with an estimated incidence of 83,770 cases in men and 93,160 in women annually for the 2020-2022 triennium, corresponding to an estimated risk of 80.12 new cases per 100,000 men and 86.65 new cases per 100,000 women [1-5].

Non-melanoma skin neoplasms, which include squamous cell carcinoma (SCC) and basal cell carcinoma (BCC), account for 98% of skin cancers, with the latter being the most common, representing about 70 to 80% of cases. There has been a trend toward increased skin cancer incidence in recent years, with SCC growing faster than BCC. However, BCC remains about twice as common as SCC. Risk factors related to skin neoplasms include male sex, age, occupation, immunosuppression, and exposure to radiation. Additionally, well-established factors associated with poor prognosis and higher risk of local recurrence and metastasis include tumor location (head and neck area), size (>2 cm), perineural invasion, depth, and histological grade [6-8].

Basal cell carcinoma is a neoplasm of cells similar to those in the basal layer of the epidermis. It mainly arises due to alterations

in the Hedgehog signaling pathway, through PTCH1 deletion or SMO overactivation, and alterations in the SUFU gene with loss of function can also occur. It is associated with sun exposure, especially intermittent exposure, lower Fitzpatrick phototypes, and is rare in individuals with darker skin types, with a greater risk in those over 50 years old and those with a history of previous burns or certain genetic syndromes. BCC predominantly appears in sun-exposed areas, particularly on the head and neck, often manifesting as a slow-growing erythematous papule with a pearly shine; it rarely metastasizes (risk of 1 in 6000). The majority of cases are easily treated by surgical excision. However, despite treatment being relatively inexpensive, the high number of cases represents a significant financial burden on the public health system [9-12].

Squamous cell carcinoma, which accounts for about 20-30% of skin tumors, is more common in men, individuals with lower phototypes, older adults, immunosuppressed individuals, and those with chronic wounds. It originates from mutations in epithelial cells, primarily due to cumulative DNA damage from UV radiation, with mutations in p53, CDKN2A, or alterations in the Ras/MAPK pathway. Furthermore, tumor suppressor gene mutations contribute to the development of this neoplasm. Clinically, SCC can present as an erythematous keratotic papule to a vegetative nodule, with dermoscopy being a key diagnostic tool, revealing features like glomerular vessels and yellow scales. Diagnosis is confirmed histopathologically, with classification into "in situ," well-differentiated, moderately differentiated, poorly differentiated, or desmoplastic variants being necessary to define the risk level for the patient. SCC has a low metastatic potential [9].

However, factors such as size >2 cm, depth >2 mm, perineural involvement, special location zones, poorly differentiated histology, and prior recurrence indicate poor prognosis and high risk. Although these tumors have an indolent course and rarely metastasize, they can be highly destructive locally, leading to significant morbidity, especially in sensitive areas, and can be potentially fatal. They also impose substantial annual costs on public finances, and there are no well-established government policies for primary prevention, presenting an alarming public health issue [13-15].

Accurate risk classification of these neoplasms is crucial for proper triage and patient follow-up, reducing the likelihood of undesirable outcomes. Therefore, it is essential to better understand the patient profile and the characteristics of the lesions to enable early diagnosis and timely treatment. This study aims to determine the epidemiological profile of the population treated in the 2022 Skin Cancer Campaign, as well as the histological types and degree of invasion of non-melanoma skin neoplasms in this population, correlating the findings with existing literature.

Methods

This is a descriptive, retrospective, cross-sectional study based on the analysis of patient records from the 2022 Skin Cancer Campaign at the Dermatology Outpatient Clinic of the Jundiaí Medical School (FMJ), where patients were diagnosed with non-melanoma skin cancer (NMSC). The variables studied included: age, sex, Fitzpatrick phototype, personal history of skin cancer, and histological type of the non-melanoma skin cancer. The research project was approved by the Ethics Committee of the Jundiaí Medical School (approval number: 6.498.890).

The participants were from the 2022 Skin Cancer Campaign at the FMJ Dermatology Outpatient Clinic, with a total of 55 participants selected. Inclusion criteria involved patients who consulted during the skin cancer campaign with a histological diagnosis of non-melanoma skin neoplasm, regardless of age, race, or sex. A total of 55 records were selected. Exclusion criteria involved patients of any age without a histological diagnosis of non-melanoma skin neoplasm seen during the FMJ Skin Cancer Campaign [16-20].

The data collected were organized into spreadsheets using Microsoft Excel® (Microsoft Corporation®, San Diego, USA). Statistical analysis was performed using the StatPlus® plugin for Excel (AnalystSoft Inc.).

Results

A total of 55 medical records were analyzed, selected according to the study's inclusion criteria. Of the total, 35 patients were female (63.6%) and 20 were male (36.4%) (FIGURE 1).

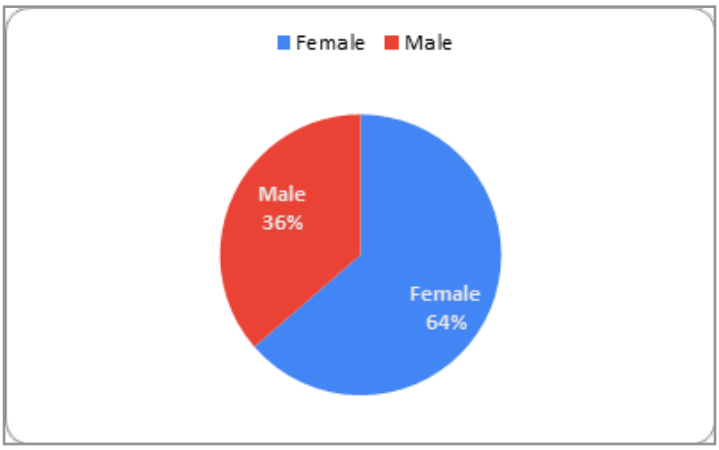

Figure 1: Distribution of Selected Patients by Sex.

Regarding age, 1 individual (1.9%) was under 30 years old, 0 participants were aged 30-40, 4 patients (7.4%) were aged 41-50, 6 participants (11.1%) were aged 51-60, 18 patients (33.3%) were aged 61-70, 15 individuals (27.8%) were aged 71-80, 7 patients (13%) were aged 81-90, and 3 patients (5.6%) were older than 90 years. One patient had no age information (FIGURE 2).

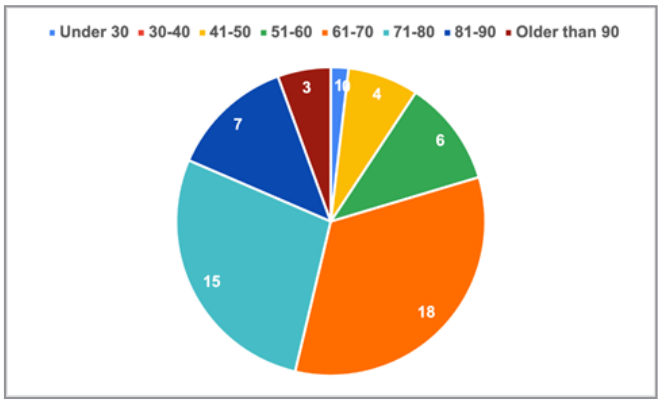

Figure 2: Distribution of Selected Patients by Age.

Concerning phototype, 1 patient was classified as phototype 1 (1.8%), 22 participants as phototype 2 (40%), 20 individuals as phototype 3 (36.8%), 5 as phototype 4 (9%), and 1 as phototype 5 (1.8%). Six patients had no information (10%). The phototype was subjectively assessed by the attending physician (FIGURE 3).

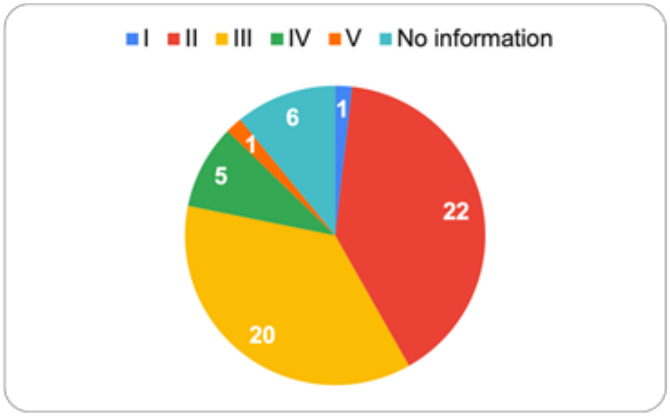

Figure 3: Distribution of Selected Patients by Phototype.

Regarding personal history of skin cancer, 16 (29%) patients had a positive history, and 27 (49%) patients had no such history. Twelve patients were considered to have insufficient information (21.8%) (FIGURE 4).

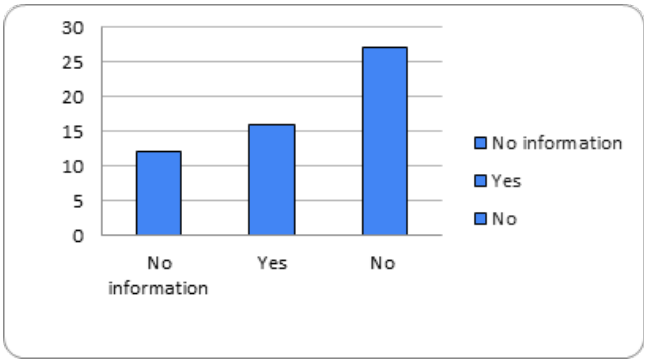

Figure 4: Distribution of Patients by Personal History of Skin Cancer.

Concerning biopsy sites, 37 biopsy points were performed on the head and neck region, representing 59.7% of the sample, while 13 points were performed on the trunk (21%). Other body areas contributed to 12 biopsy points (19.4%) (FIGURE 5).

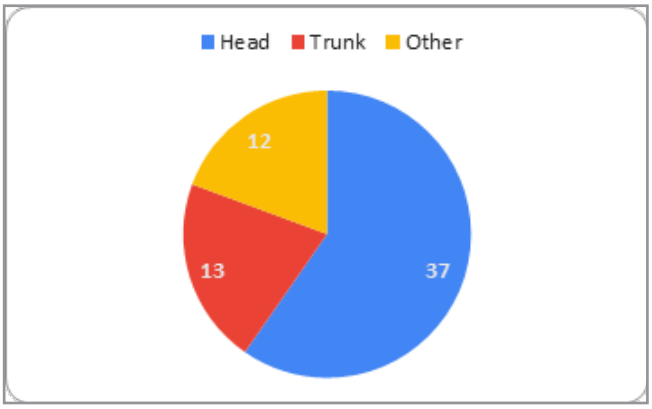

Figure 5: Anatomical Sites of Biopsies.

In total, 62 biopsy points were performed under the hypothesis of NMSC for the 55 patients, with an average of 1.12 biopsy points per patient. Initially, BCC was suspected for 35 lesions, and SCC was suspected for 31 lesions identified during the Skin Cancer Campaign consultation (FIGURE 6).

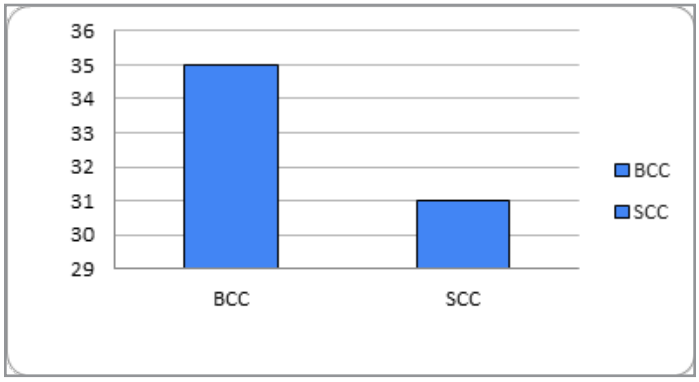

Figure 6: Diagnostic Hypotheses.

Histopathology confirmed 26 lesions (41.9%) as BCC and 6 lesions (9.6%) as SCC. There were also 16 lesions diagnosed as actinic keratosis (AK) (25.8%). Therefore, the positivity rate for BCC biopsies was 74.2% and for SCC was 19.3% (FIGURE 7).

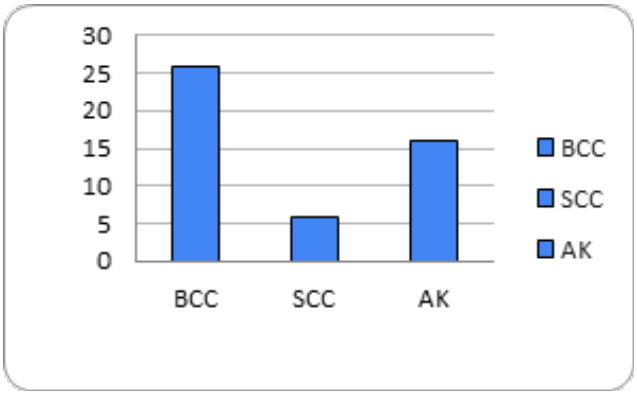

Figure 7: Histopathological Diagnoses.

Discussion

This study aimed to evaluate the histopathological results of skin lesions referred for biopsy due to suspected malignancy of non-melanoma skin cancer (NMSC) during the Annual Skin Cancer Campaign of 2022, held at the Faculty of Medicine of Jundiaí. NMSC is the most prevalent neoplasm worldwide and, consequently, the most common cancer in the Brazilian population. According to the most recent estimates from the National Cancer Institute (INCA), Brazil is expected to register 704,000 new cancer cases in the 2023-2025 triennium, with 31.3% (approximately 220,000 cases) of these being NMSC1. This represents a significant burden on the public healthcare system, especially considering that there is still no established national policy for the prevention and screening of this type of cancer, which can hinder early diagnosis [21-25].

Although there is no official screening protocol for NMSC, medical societies recommend at least an annual dermatological consultation for a full skin examination, aiming at early diagnosis of suspicious lesions. Additionally, patient self-monitoring is crucial, particularly in identifying changes in existing lesions or the appearance of new ones. Any changes in size, color, shape, or texture should prompt immediate medical consultation. These recommendations are especially important in patients with personal or family history of skin cancer. Currently, the dermatoscope is an essential tool for dermatologists, significantly enhancing diagnostic accuracy and helping to avoid unnecessary procedures. By providing detailed visualization of skin structures through magnification and specific lighting, dermatoscopy allows for a more accurate diagnosis of both benign and malignant skin diseases [26, 27].

The well-established risk factors for NMSC include male sex, advanced age, occupation, immunosuppression, and ultraviolet (UV) radiation exposure. The data from this study align with the literature, with 90.8% of NMSC cases diagnosed in patients over 50 years old, and 87.7% of the sample having lighter skin types (phototypes 1, 2, and 3). Increased lifetime UV exposure is a significant risk factor for the development of skin cancer, particularly in individuals with lighter skin, as they have less natural protection against UV radiation. In contrast, in individuals with higher phototypes, NMSC is more frequently associated with chronic wounds or scars.

A total of 62 biopsies were performed on 55 patients, with 32 diagnoses of NMSC (51.6%). Of these, 26 were diagnosed as basal cell carcinoma (BCC) (41.9%), and 6 as squamous cell carcinoma (SCC) (9.6%). Additionally, 16 lesions were diagnosed as actinic keratosis (AK) (25.8%). These findings are consistent with a study conducted in a referral service in southern Brazil, which found 39.74% of BCC, 18.27% of SCC, 4.89% of melanoma, and 31.1% of AK25. NMSC was also more prevalent in patients over 70 years of age, as observed in other studies [28].

An increased number of women underwent biopsies in this study, which may be attributed to the fact that Brazilian women generally seek healthcare services more frequently than men, with women visiting healthcare facilities approximately 1.9 times more than men. This is a cultural aspect observed in the country, often linked to labor habits. Additionally, most biopsies were performed in the head and neck area, which accounted for 59.7% of the cases. This finding is consistent with the literature, which reports up to 64% of BCC cases being located in this region. Different histological types of skin cancers tend to favor specific anatomical regions, influencing biopsy and treatment patterns [29].

Histopathological analysis of the biopsy remains the gold standard for diagnosing NMSC. BCC is characterized as a malignant tumor of follicular germ cells, primarily affecting individuals with a history of chronic sun exposure. SCC, on the other hand, involves atypical proliferation and differentiation of squamous cells and is more aggressive, with greater potential for local invasion and metastasis. BCC was more prevalent than SCC in this study, corroborating the general finding that BCC is the most common form of NMSC.

Regarding treatment effectiveness, the Number Needed to Treat (NNT) is a key measure to evaluate the efficacy of a diagnostic method. In this study, 62 biopsies were performed, resulting in 32 NMSC diagnoses, meaning 1.9 biopsies were needed to diagnose and treat one case of skin cancer. The average of 1.12 biopsies per patient reflects a careful approach in confirming or excluding NMSC. The positivity rates for BCC (74.2%) and SCC (19.3%) provide valuable insights into the effectiveness of initial diagnostic hypotheses, and may prompt discussions on the accuracy of clinical evaluations compared to histopathological findings. This study reaffirms the well-established risk factors for NMSC and highlights the predominance of BCC over SCC, in line with global findings. The importance of prevention strategies, early diagnosis, and continuous monitoring becomes evident, particularly given the increasing impact of these conditions on public health [30].

Conclusion

In conclusion, this study analyzed the medical records of 55 patients with non-melanoma skin cancer, showing a predominance of the female sex, accounting for 63.6% of the cases, compared to 36.4% in the male sex. Regarding age distribution, a wide range was observed, with the majority of patients aged between 61 and 80 years [31]. These results provide important information about the incidence of this type of cancer and can help in the development of more targeted prevention and treatment strategies. It is essential that healthcare professionals are aware of these findings to provide appropriate and personalized care to patients affected by this disease.

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