Analysis of diagnostic and therapy accuracy index based on non-melanoma’s skin cancer dermoscopy

ABSTRACT

Introduction: Non-melanoma skin cancer is among the most frequent neoplasms in Brazil and is deemed a public health problem. Initial diagnosis is based on clinical suspicion and includes dermoscopy. Confirmation is carried out via histological analysis. Dermoscopy also contributes to the demarcation of tumor safety margins.

Objective: To analyze the accuracy of dermoscopy in the diagnosis of non-melanoma skin cancer and its effectiveness in defining the lateral margins of these tumors in excisional biopsies.

Methods: Comparison of the dermoscopy-based diagnostic hypothesis with the final histological outcome and involvement of lateral margins.

Results: The data relating to a total of 70 lesions suspicious of non-melanoma skin cancer arising from a group of 50 patients were evaluated from 2015 to 2017. The comparison of the diagnostic hypothesis with the final histological outcome after excisional biopsy, indicated success rates of 79.6% for suspected cases of basal cell carcinoma and 23.8% for squamous cell carcinoma. Safety margins were observed in 74% of basal cell carcinomas and in 60% of squamous cell carcinomas.

Conclusions: The diagnosis of non-melanoma skin cancers depends on experienced dermatologists and pathologists, with the interaction between these professionals being crucial. Dermoscopy has contributed in a more significant way to the diagnosis of basal cell carcinoma when compared to that of squamous cell carcinoma.

Keywords: skin neoplasms; diagnosis, differential; margin

INTRODUÇÃO: O câncer da pele não melanoma está entre as neoplasias de maior incidência no Brasil, sendo considerado um problema de saúde pública. O diagnóstico se inicia pela suspeita clínica, incluindo a dermatoscopia, e, de forma definitiva, a análise histopatológica. A dermatoscopia contribui também para a demarcação de margens de segurança do tumor.

OBJETIVO: Analisar a acurácia da dermatoscopia quanto ao diagnóstico do câncer da pele não melanoma e sua eficácia na definição das margens laterais desses tumores em biópsias excisionais.

MÉTODOS: Comparação da hipótese diagnóstica levantada mediante a dermatoscopia com o resultado histológico final e comprometimento de margens laterais.

RESULTADOS: Foram avaliados de 2015 a 2017, dados de 70 lesões suspeitas de câncer da pele não melanoma em um grupo de 50 pacientes. A comparação da hipótese diagnóstica com o resultado histológico final após biópsia excisional mostrou índice de acerto de 79,6% para os casos suspeitos de carcinoma basocelular e de 23,8% para os de carcinoma espinocelular. As margens de segurança foram respeitadas em 74% dos carcinoma basocelular e 60% dos carcinoma espinocelular.

CONCLUSÕES: O diagnóstico de câncer da pele não melanoma depende de dermatologistas e patologistas experientes, sendo fundamental a interação entre ambos. A dermatoscopia contribuiu para o diagnóstico do carcinoma basocelular de forma mais importante do que para o do carcinoma espinocelular.

Palavras-chave: neoplasias; diagnóstico diferencial; margem
INTRODUCTION
Non-melanoma skin cancer (NMSC) is among the most common malignancies, occurring more than the other types of cancers combined, therefore being a public health issue due to its increasing incidence and to the consequent costs associated with treatment.

Tumors that are representative for NMSC are basal cell carcinomas (BCC) and squamous cell carcinomas (SCC), the latter representing about 20% of skin cancer cases and the former approximately 70%. In general, they cause more morbidity than mortality, but both have the potential to metastasize (0.5% for BCC and 20% for SCC). Diagnostic suspicion of these tumors starts with the clinical aspect and is aided by dermoscopic features. BCC’s dermoscopy can present with the following signs, with high specificity: “spoke wheel” areas, large blue-grey ovoid nests, multiple blue-grey globules, “leaf-like” areas (or in “gloved finger”), arborizing telangiectasias and ulcerations (less specific). SCC’s is usually not that specific as to differentiate it from the early variants (actinic keratosis and Bowen disease) and, in some cases, even other entities such as seborrheic keratoses, verruca vulgaris, and keratoacanthomas. Glomerular vessels and yellow-white areas are dermoscopic findings in SCC.

The gold-standard for the diagnosis of NMSC, either BCC or SCC, is histopathology. There are, however, non-invasive methods to examine the lesions in an initial phase and stratify their risk, dermoscopy being one of them. Its importance consists in the necessity to minimize costs with unnecessary biopsies, define the physician’s attitude towards the patient and, in some cases, reduce surgical morbidity. On the other hand, dermoscopy contributes for the early diagnosis (early or small lesions) and appropriate treatment (determination of surgical margins). These are key-factors for a more favorable prognosis for NMSC.

The objective of the study is to perform a self-assessment of an academic service of the Brazilian Society of Dermatology (SBD) regarding the clinical-dermoscopic accuracy rates for NMSC and analyze the degree of efficacy of the excisional biopsy in avoiding an incisional step considering the cases accurate for NMSC.

METHOD
Study conducted at the service of dermatology, Universidade de Mogi das Cruzes, São Paulo, Brazil, from 2015 to 2017, where 70 suspicious lesions for NMSC were evaluated in a group with 50 patients.

Inclusion criteria for the lesions were low-risk NMSC (up to 1cm and well-defined) and prediction of non-complex reconstruction, i.e., edge-edge closure to enable wider excision in case of affected margins. The lateral margin used was 3mm and the deep margin was down to the subcutaneous tissue, with the scalpel at a 90º angle in relation to the skin.

Exclusion criteria were tumors larger than 1cm, ill-defined, recurrences and periorificial.

The lesions were registered in a database with the following information: diagnostic hypothesis, age, gender, and area of the lesion. After this step, the dermoscopic diagnostic hypothesis was compared to the final histologic diagnosis and involvement of surgical margins.

The dermoscopic diagnostic accuracy rate was defined by the degree of agreement of the diagnostic hypothesis with the final histologic report. The therapeutic accuracy rate aided by dermoscopy was defined as the percentage of NMSC cases that had surgical margins clear of malignancy.

The development of the database, as well as the analysis of the data, was done with Microsoft Excel. The statistical analysis was quanti-qualitative and descriptive.

The research was performed within the parameters of the Resolution 466/12 and their complements of the Conselho Nacional de Saúde/Ministério da Saúde, that states that collected data must be anonymous and reliable. The Committee of Ethics in Research – CEP/UMC approved the protocol of research number 50776615.8.0000.5497 and report 1.463.323.

RESULTS
Seventy skin lesions were analyzed with diagnostic hypothesis (DH) of NMSC in a group of 50 patients, 27 being male (54%) and 23 female (46%) with a mean age of 70 years (Table 1). Of these data, the DH of BCC represented 70% and of SCC, 30%.

The diagnostic accuracy rate for BCC was of 79.6%, and for SCC, 23.8% (Table 2). Table 3 shows the other histologic diagnoses found that do not correspond to the clinical hypothesis of BCC.

Table 4 shows other histologic diagnoses found that do not correlate with the clinical hypothesis of SCC.

Regarding the body location, the most affected areas were head and neck, followed by upper limbs and hands (Table 5). The area more prevalent for BCC was the head and neck (63%), and for SCC, upper limbs (48%).

Of the accurate BCC diagnoses, 74% had surgical margins clear of malignancy, compared to 60% of SCC. There was no description of the surgical margins in seven BCC lesions and one SCC lesion (Graph 1).

(70% to 20%, 3.5 relationship). Regarding the results found, the proportion of BCC to SCC was of 39:8 or 4.875. Therefore, in this study, there was a higher relative prevalence of BCC compared to SCC in the histologic results.

In this study, we observed that the accuracy rate for BCC was higher than for SCC. This finding can be explained based on the more specific dermoscopic features for the former, com-

| TABLE 1: Sample distribution and mean age according to gender, Mogi das Cruzes, 2017 |
|-----------------------------------------|-----------------|-------------|
| Gender | Results | Age (mean) |
| Male | 26 (53%) | 69 years |
| Female | 23 (47%) | 71 years |
TABLE 2: Clinical accuracy of the diagnosis of BCC and SCC, Mogi das Cruzes, 2017

<table>
<thead>
<tr>
<th>Diagnostic hypothesis of BCC</th>
<th>SCC present (n)</th>
<th>SCC absent (n)</th>
<th>Diagnostic hypothesis of SCC</th>
<th>SCC present (n)</th>
<th>BCC absent (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCC present (n)</td>
<td>39</td>
<td>10</td>
<td>SCC present (n)</td>
<td>5</td>
<td>16</td>
</tr>
</tbody>
</table>

Predictive value (clinical accuracy) = (39 / 49) x 100 = 79.6%

Predictive value (clinical accuracy) = (5 / 21) x 100 = 23.8%

Predictive value considered BCC and SCC (clinical accuracy) = (44 / 70) x 100 = 62.8%

TABLE 3: Histopathology results conflicting with the clinical diagnosis of BCC, Mogi das Cruzes, 2017

<table>
<thead>
<tr>
<th>Histology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinic keratosis</td>
<td>3 (30%)</td>
</tr>
<tr>
<td>SCC</td>
<td>3 (30%)</td>
</tr>
<tr>
<td>Seborrheic keratosis</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>Chronic dermatitis linfofibiatoclinica</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>Dermal fibrosis</td>
<td>1 (10%)</td>
</tr>
</tbody>
</table>

TABLE 4: Histopathology results conflicting with the clinical diagnosis of SCC, Mogi das Cruzes, 2017

<table>
<thead>
<tr>
<th>Histology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinic keratosis</td>
<td>9 (56%)</td>
</tr>
<tr>
<td>Keratoacanthoma</td>
<td>3 (19%)</td>
</tr>
<tr>
<td>BCC</td>
<td>3 (19%)</td>
</tr>
<tr>
<td>Viral wart</td>
<td>1 (6%)</td>
</tr>
</tbody>
</table>

TABLE 5: Body distribution of NMSC (BCC and SCC) Mogi das Cruzes, 2017

<table>
<thead>
<tr>
<th>Area</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and Neck</td>
<td>(52%)</td>
</tr>
<tr>
<td>Upper limbs</td>
<td>(23%)</td>
</tr>
<tr>
<td>Chest, back and neck</td>
<td>(21%)</td>
</tr>
<tr>
<td>Lower limbs and feet</td>
<td>(4%)</td>
</tr>
</tbody>
</table>

CONCLUSION

NMSC diagnosis depends on consistent and well sound information, using clinical, dermoscopic and, specially, histopathologic criteria. The accuracy of the first two depends largely on the experience of the dermatologist, and the third of a pathologist experienced in skin and, if possible, skin tumors. More than that, the interaction between the two professionals is extremely important.

In tertiary cutaneous oncology services, the assistant dermatologist should specify the type of biopsy (incisional x excisional) and the characteristics that lead to the clinical suspicion, so that the pathologist can fulfill their role with equal accuracy.
Dermoscopy learning curve leads to a higher accuracy rate in clinical suspicion. This resource, however, failed in differentiating SCC from other verrucous conditions. The higher surgical margin involvement in SCC cases reinforces the use of larger margins than the recommended when facing this tumor, when compared to BCCs. For BCCs, dermoscopy contributed to the diagnosis in a greater way, however, was not typical nor unanimous in the resolution of excisional biopsy.

**REFERENCES**


**PARTICIPATION IN THE ARTICLE:**

**André Cesar Pessanha:**
Research project, data recording and final review

**Isadora Zambuzi:**
Introduction and organisation of the results

**Carlos Vidal:**
Preparation of the tables, discussion and submission of the study