The management of skin pathology of tumors and inflammatory disorders is difficult due to the existence of constantly changing diagnostic and treatment algorithms. The incidence of cutaneous melanoma and other melanocytic or non-melanoma tumors is currently increasing. Melanoma is difficult to treat in advanced stages due to its aggressiveness, and early diagnosis is required to improve the prognosis of these patients. Imaging techniques, such as classical and digital dermatoscopy can provide information on structure, vascular pattern, prognostic factors and detailed morphological analysis that can lead to improved individual management. This article presents a retrospective study that aims to analyze the contribution of imaging techniques to clinical and histological data.

Keywords: skin tumors, dermatoscopy, melanoma, melanocytic nevi

Experimental part

Materials and methods

The retrospective observational study was conducted after obtaining approval from the Institutional Ethics Commission. Patients between 18 to 75 years old with high-risk, intermediate or non-malignant pigmentary and non-pigmentarytumoral lesions were admitted at the St. Spiridon Hospital Dermatology Clinic and the offices in which doctors were working between 2015 and 2017. Excluded from the study were patients presenting neuropsychiatric pathology, deep neoplastic pathology, tumor lesions that had already undergone one or more surgical procedures, such as biopsy or excision, infected or with significant bleeding. A clinically integrative, dermatoscopic, histopathological analysis was performed and these data were introduced into the database and statistically analyzed using the Statistics 7 software.

Results and discussions

The study included at this stage a total of 38 patients diagnosed with pigmentary or non-pigmentary tumoral lesions. The following diagnostic imaging tests were used:

- Manual dermatoscopy: for the examination of tumor lesions, a non-polarized dermatoscope and / or dermatoscope with polarized light, with or without immersion fluid, were used depending on the type of tumor being analyzed.
- Videodermatoscopy (digital dermatoscopy): A videodermatoscope was used to store images and assisted computer analysis by obtaining a DANAOS score for each tumor lesion.
- The histopathological examination is the gold standard diagnostic method in the evaluation of pigmentary and non-pigmentary cutaneous pathology.
non-pigmentary tumoral lesions, which analyzes in optical microscopy. Immunohistochemistry data are useful in the assessment of various pathologies as well as in cases of skin lesions where classical investigations do not provide conclusive data [6,7].

The analysis of the data shows that 63.1% of the registered patients were female and 36.9% male, with an average age of 41.05 years, ranging from 18 to 70 years. 89.46% of the patients came from an urban environment, and 34.3% of the patients said they had used sun protection products during exposure to the sun. Patients reported a personal history of cardiovascular disease (hypertension, ischemic cardiopathy), vulgar psoriasis, autoimmune thyroiditis and operated breast cancer.

Figure 2 shows that the excised lesions had the following topography: 16% anterior thorax, 34% posterior thorax, 26% head and cervical region, 16% upper limbs, 8% lower limbs, with no mucosal involvement.

Table 1

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Tumors</th>
<th>Benign</th>
<th>%</th>
<th>Suspected of malignancy</th>
<th>%</th>
<th>Malignant</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>N</td>
<td>29</td>
<td>76.32</td>
<td>4</td>
<td>10.53</td>
<td>5</td>
<td>13.16</td>
<td>38</td>
</tr>
<tr>
<td>Histological</td>
<td>N</td>
<td>31</td>
<td>81.58</td>
<td>1</td>
<td>2.63</td>
<td>6</td>
<td>15.79</td>
<td>38</td>
</tr>
</tbody>
</table>

Fig. 3. Differences between frequency of tumors observed by clinical and histological diagnosis

Comparison of clinical and histological diagnosis:

Table 2

<table>
<thead>
<tr>
<th>Clinical Diagnosis</th>
<th>Histologic Diagnosis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Positive</td>
<td>10</td>
</tr>
<tr>
<td>Negative</td>
<td>Negative</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>38</td>
</tr>
</tbody>
</table>
Comparison of dermatoscopic diagnosis assessed by malignant, suspected or benign tumor with histologic diagnosis

Dermatoscopy is a non-invasive, practical and time-saving method that allows the diagnosis and evaluation of tumor morphological parameters that may or may not be detected in the clinical examination of cutaneous lesions, and studies show that this method improves the accuracy of clinical diagnosis by 20-30% [8].

In order to establish a dermatoscopic diagnosis, several diagnostic algorithms have been described over time. Most have the primary purpose of differentiating melanocytic lesions from non-melanocytic lesions. Subsequently, melanocytic lesions determine the benign or malignant nature. The ABCDE rule is one of the most common methods used in the clinical evaluation of pigment injuries. In this semiquantitative model, each of the four criteria is assigned a score, based on a calculation formula, the total dermatoscopic score (SDT) is determined. Other algorithms can be used such as:

a. The 7 improved criteria consisting of: atypical network, atypical vessels, white-blue veil (all valued at 2 points), regression structures, irregular dots / globules, irregular blotches - the presence of a single criterion is sufficient to perform a biopsy; and the presence of more than 2 points is equivalent to melanoma.

b. Pattern analysis - descriptive method.

c. The two-step algorithm: determining whether or not the tumor is melanocytic, and in the second stage establishing the type of tumor (nevus or melanoma).

d. The Menzies method consists of the presence of negative characteristics (symmetric pattern, the presence of a single color) and positive features of melanoma - in which the diagnosis of melanoma consists in the absence of negative characteristics and the presence of at least one positive characteristic.

Digital dermatoscopy is a modern method of diagnosis and assessment of skin tumors, especially pigmentary lesions, using video digital imaging, a powerful tool with the ability to memorize, analyze images and compare them over a period of time to track the evolution of cutaneous lesions. The images obtained from the videodermatoscopic examination can be analyzed by the clinician and can also be evaluated by assisted computer analysis system by calculating the DANAOS score based on the Artificial Intelligence principle. Digital dermatoscopy may allow early detection of malignant tumor lesions, the DANAOS score obtained from dermatoscopic analysis of tumors may range from 0 to 10, with values less than 4.75 being attributed to benign lesions, values greater than 5.45 for...
The sensitivity of the digital dermatoscopy analysis was reported to be between 80% and 100% [10] and the specificity between 46 and 98% [11]. Similarly, in our study the sensitivity of the dermatoscopic diagnosis to the assessment of tumor malignancy / suspected tumor risk was 87.5%, t = 2.248 > p = 0.01 and the specificity was recorded as 93.33% (fig. 4).

Also, computer-assisted digital evaluation of skin tumor lesions provides the possibility of follow-up, particularly in patients with multiple atypical nevi [12], the dermatologist having the ability to compare the parameters of tumor lesions (maximum diameters, surface, asymmetry, margins, variety of color) at predetermined time intervals, as well as to analyze these lesions with the DANAOS score (dynamic values), which allows the possibility of establishing prognostic factors and the therapeutic plan (fig. 5).

The prognosis score of the DANAOS score was correlated with the low malignant dermatoscopic score with values lower than 4.75 in 28.94% of cases, values between 4.75 and 5.45 in 7.89% of cases and an increased risk of malignancy was attributed with values greater than 5.45 in 63.17% of cases.

The most common type of tumor analyzed was the compound melanocytic nevus (26.32%). The comparison of the frequency of the types of tumors diagnosed clinically and histopathologically revealed as shown in table 6 the following differences:

Table 6

<table>
<thead>
<tr>
<th>Tumor type</th>
<th>Clinical</th>
<th>Histological</th>
<th>Diagnosed</th>
<th>Diagnosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compound melanocytic nevus</td>
<td>26,32</td>
<td>10,33</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sebokkole verruca</td>
<td>15,79</td>
<td>10,33</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hemangiomia</td>
<td>5,26</td>
<td>5,26</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Junctional melanocytic nevus</td>
<td>5,26</td>
<td>5,26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal nev</td>
<td>7,89</td>
<td>7,89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verruca vulgaris</td>
<td>2,63</td>
<td>2,63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermatofibroma</td>
<td>2,63</td>
<td>2,63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Nevi</td>
<td>7,89</td>
<td>7,89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papiloma</td>
<td>2,63</td>
<td>2,63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysplastic melanocytic nevus</td>
<td>10,33</td>
<td>2,63</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Squamous cell carcinoma in situ</td>
<td>2,63</td>
<td>2,63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nodular basal cell carcinoma</td>
<td>7,89</td>
<td>7,89</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Malignant melanoma</td>
<td>2,63</td>
<td>2,63</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- from 6 cases diagnosed clinically with seborrheic wart, histopathologically there were 2 cases with non dermal nevi;
- from 4 clinically diagnosed cases with dysplastic melanocytic nevi, histopathologically 2 cases with nodular basal cell carcinoma and 1 case with blue nevi were diagnosed, the difference being significant at p < 0.10; p = 0.05> t = 1.388> p = 0.10
- from 3 clinically diagnosed cases with nodular basal cell carcinoma, histologically 1 case was diagnosed with non-dermal and 1 case with malignant melanoma.

Differences have not been statistically significant. Clinically, 5.27% of cases with benign tumors (76.32% compared to 71.05% histologically diagnosed) were diagnosed with 7.9% more cases of suspected malignant tumors (10.53% vs. 2. 63% histologically diagnosed, the
difference being almost statistically significant \( p = 0.05 > t = 1.389 > p = 0.10 \) and 5.27% more cases with malignant tumors (13.16% histologically diagnosed) (fig. 6).

The limits of this analysis may be given by the reduced number of patients, and data on the study of the effects of dermatoscopy on the current practice of the dermatologist are limited, requiring further research and prospective or retrospective studies in a larger number of patients.

Clarification:
The confidence intervals for sensitivity, specificity and accuracy are exact Clopper-Pearson confidence intervals. The confidence intervals for Likelihood Ratios are calculated using the Log method.

NOTE
If the prevalence of the disease is known, then the positive and negative predictive value can be calculated using a formula based on Bayes’ theorem:

\[
PPV = \frac{\text{sensitivity} \times \text{prevalence}}{\text{sensitivity} \times \text{prevalence} + (1 - \text{specificity}) \times (1 - \text{prevalence})}
\]

And respectively:

\[
NPV = \frac{\text{specificity} \times (1 - \text{prevalence})}{(1 - \text{sensitivity}) \times \text{prevalence} + \text{specificity} \times (1 - \text{prevalence})}
\]

Conclusions
Taking into account the results obtained in the study, it is observed that the specificity of the dermatoscopic examination with the assessment of the malignant or suspected risk of tumor lesions is comparable to that of the clinical examination with the naked eye. It is also dependent on the examiner and needs a dermatoscopic analysis training to increase sensitivity and diagnostic specificity. It is also noted that videodermatoscopic evaluation with lesion analysis and DANAOS score calculation cannot replace clinical examination, but in the case of atypical tumor lesions, this method can give the dermatologist a quick second expert opinion as literature data [13,14]. Melanoma can be clinically and sometimes even dermatoscopically not differentiated from benign lesions, representing a challenge for the dermatologist in the formulation of the diagnosis until the histopathological confirmation.

References

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