

PREVALENCE OF MALIGNANT MELANOMA AND OF OTHER MALIGNANT AND NON-MALIGNANT UV-INDUCED SKIN LESIONS IN THE CONTEXT OF OCCUPATIONAL OR SEASONAL SUN EXPOSURE IN VÂLCEA COUNTY

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Summary

The article below is a brief review of several cases of malignant and non-malignant UV-induced skin lesions, which reached the dermatovenerology practice established in Râmnicu-Vâlcea by means of funding obtained within the project Sustainable Entrepreneurship in South-West Oltenia Region. Thanks to the obtained funding, a videodermoscopy device was purchased, with the help of which the screening of both benign and malignant melanocytic lesions is performed. Through this approach (purchase of a videodermoscopy device), patients' access to computerized, efficient, standardized screening, supported by the latest technological innovations, is streamlined.

Keywords: naevi, melanoma, dermoscopy.

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This paper aims to illustrate several representative clinical cases which approached in the medical practice established in an urban area, Municipality of Râmnicu Vâlcea.

Initially, the research was intended to last for two years, including volunteering actions in rural areas from Vâlcea County. However, there were general restrictive conditions in the context of the SARS-COV2 pandemic. Thus, this paper does not include the mentioned volunteering campaigns.

The organisation of volunteering actions was considered inappropriate, because it would have involved an exposure of both the medical staff and especially the potential patients, volunteers, considering that the aggregation of large groups of volunteer patients, mostly elderly, would be

dangerous in the current medical-sanitary context.

Dermoscopy is a clinical tool for dermatological diagnosis. It is a non-invasive technique, frequently used in dermatology, "extending the dermatologist's eye beyond clinical limits".

Dermoscopy can be classified into conventional dermoscopy performed by means of a dermatoscope (the instrument that magnifies the image like a magnifying glass, with a magnifying lens) and digital dermoscopy performed using a computerised system consisting of a camera (which photographs the patient from head to toe, the camera being located on a rod on which it slides from top to bottom and from bottom to top to take a series of photos), a background (a panel

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to which the patient is “attached”), and the macroscopy camera which is a much more efficient dermatoscope, with a much higher magnification power than the classic dermatoscope. All these elements are digitally interconnected. The images obtained by means of the camera, as well as those obtained by means of the macroscopy camera are standardised, can be stored, analysed in the clinical context and compared from one visit to another to the dermatologist.

Videodermoscopy is a method that finds a well-deserved place in dermatology practices, because it is a standardized method allowing the storage of images and the long-term follow-up of benign melanocytic lesions, early detection, in the early stages of malignancies, as well as limiting the excisions of naevi for prophylactic purposes. Although it is a standardized method that respects clear algorithms, videodermoscopy does not replace the clinician’s eye who is the one having the decision-making power both from a diagnostic and therapeutic point of view.

Rule:

- A (Asymmetry)
- B (Borders; appearance of borders)
- C (Colour)
- D (Differential Structures): pigment network; depigmentation; lesion borders; brown globules; astructural areas; dark spots; radial streaks; blue veil; pseudopods.

According to Argenziano, the “List of the 7 criteria” includes 3 major criteria: atypical pigment network, blue-white veil, atypical vascular pattern and 4 minor criteria: irregular streaks, irregular pigmentation, irregular globules, regression pattern.

The prevalence of skin cancer is increasing due to cumulative or intense exposure to solar radiation. Moreover, “this problem is exacerbated by fashion trends, easy access to the sun, ozone layer holes and increase in the life expectancy of the population.”

Likewise, “an important role, but not the only one, is played by the phototype of the person

exposing to solar radiation, the amount of solar radiation exposure, the intensity of exposure, the duration of sun exposure and the sun exposure in childhood.”

Among the skin phototypes, the first two are more susceptible to skin cancer, but the other phototypes also become susceptible in case of sunburn.

“The intensity of the skin damage due to solar radiation exposure depends on:

- Phototype.
- Cumulative exposure to ultraviolet radiation.
- Intensity of sun exposure.
- Sun exposure in childhood.
- Proximity to the Equator”.

Material and Method

A retrospective study was performed that included a number of 61 patients with sun exposure. They were selected from patients who went to the dermatology practice for 9 months during 2020.

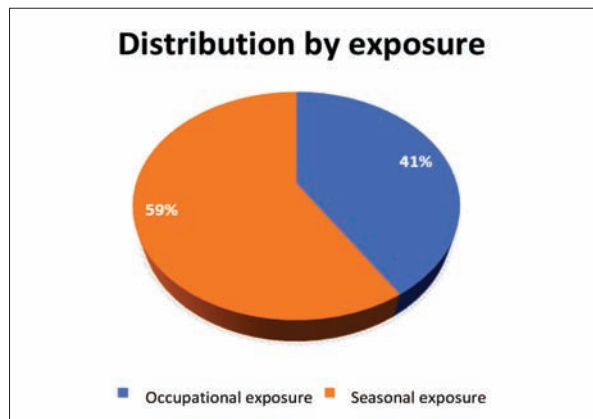
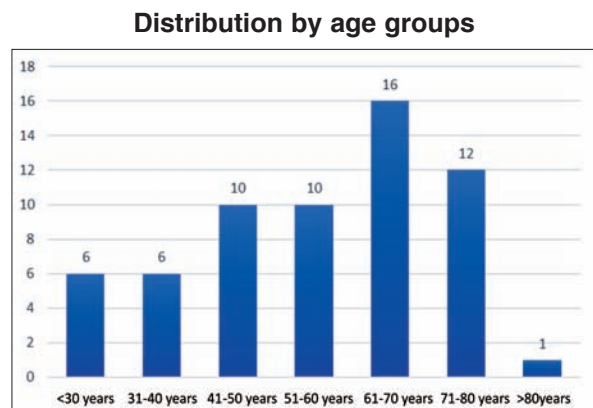
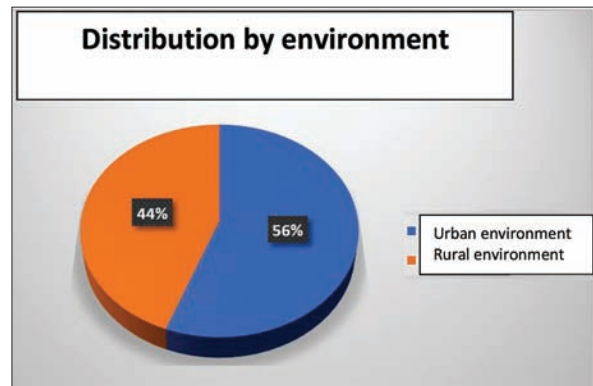
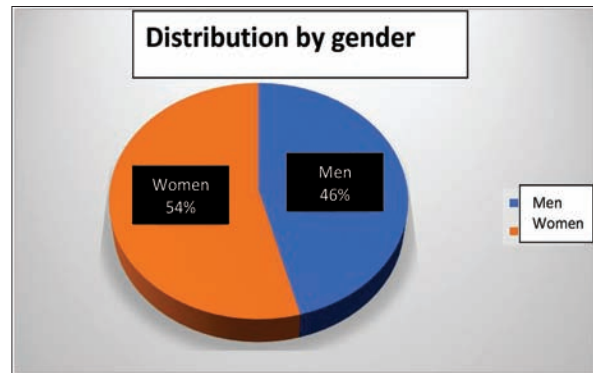
The 61 patients were clinically evaluated, with the conventional dermatoscope and using a videodermatoscope, focusing on lesions after sun exposure. In the case of some patients, the diagnosis, but especially the establishment of the therapeutic conduct also required the performance of the histopathological examination.

Results

61 patients were evaluated, out of which 33 women and 28 men, aged between 25 and 81 years (women between 25 and 81 years, men between 25 and 80 years), coming from both urban (most of the cases, 34 patients) and rural environment (27 patients), with both seasonal and occupational sun exposure (the occupational exposure is significantly more common in patients from rural areas).

Group features:

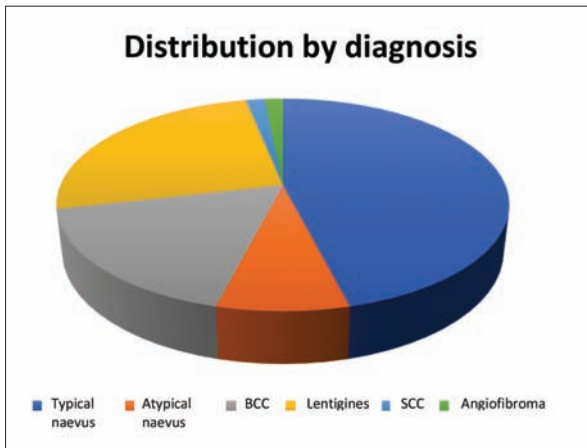
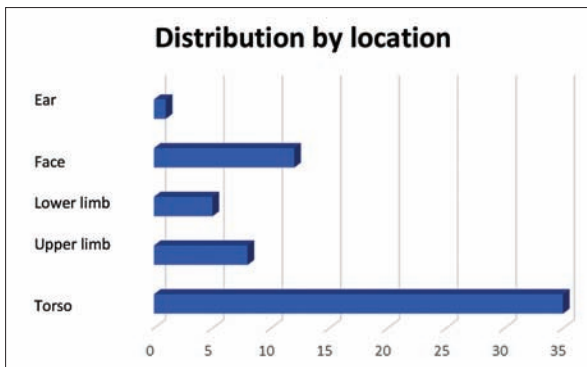
Variable	Total	Percentage
Sex		
Women	33	54%
Men	28	46%
Environment		
Urban	34	56%
Rural	27	44%
Age		
<30 years	6	10%
30-40 years	6	10%
41-50 years	10	16%
51-60 years	10	16%
61-70 years	16	26%
71-80 years	12	20%
>80 years		
Location		
Torso	35	57%
Upper limb	8	13%
Lower limb	5	8%
Face	12	20%
Ear	1	2%
Exposure		
Occupational	25	41%
Seasonal	36	59%
Diagnosis		
Typical naevus	29	46%
Atypical naevus	5	8%
BCC	11	17%
Lentigines	16	25%
SCC	1	2%
Angiofibroma	1	2%



The minimum age was 25 years. The maximum age was 81 years. The average age was 55.62 (16.3) years. The average age among male patients was 55.25 (17.7) years. Among female patients, it was 55.93 (15.24) years.

To evaluate the accuracy of conventional dermoscopy, respectively of videodermoscopy, we compared the dermoscopic diagnosis with the histopathological one. The latter was performed for patients who were suspected to have a malignant skin tumour following the dermoscopic examination, but also upon request. The study included 24 patients who underwent conventional dermoscopy, videodermoscopy and histopathological examination.

Conventional dermoscopy
 18/24 = 75 % diagnostic correlation
 Videodermoscopy
 22/24=91.66% diagnostic correlation



McNemar’s test

	Videodermatoscopy	
	Poz	Neg
Conventional dermoscopy	Poz	Neg
Poz	18	0
Neg	4	2
chi-square= 4.0000		
p=0,045		

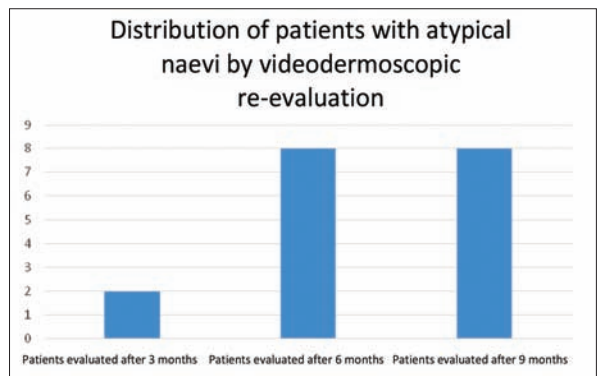
The sensitivity of videodermoscopy was higher compared to the sensitivity of conventional dermoscopy in terms of establishing the diagnosis in the study group. The difference between the two diagnostic methods is statistically significant ($p = 0.045$).

However, it should be taken into account that the lesions were visualized by the dermatologist with limited experience in both conventional and digital dermoscopy, namely less than two years of clinical experience in conventional and digital dermoscopy.

The diagnosis of melanoma was suspected in 4 patients after conventional dermoscopy and in 2 of these patients after videodermoscopy. However, the histopathological examination established the diagnosis of dysplastic naevus in 3 of the patients and BCC in one of the patients.

5 patients with atypical naevi were called for re-evaluation: 2 patients after 3 months and 3 patients after 6 months. The two patients called after 3 months were also re-evaluated after 6 and 9 months, respectively, the others being re-evaluated after 1 year. The re-evaluations did not identify any additional changes.

Also, patients who after the histopathological examination were diagnosed with dysplastic naevi, although initially melanoma was suspected, were re-evaluated after 6 and 9 months and no changes were identified.



The patients considered are those diagnosed from the beginning with atypical naevi, plus the three patients whose histopathological examination led to the same conclusion.

Clinical lesions

A. Solar lentigo

It can be considered a precursor of seborrheic keratoses and it is found on the face, upper chest, dorsal forearms and dorsal hands.

Flat seborrheic keratosis located on the hands and face is called age spot by the patient and solar lentigo by the dermatologist.

From a clinical point of view, lentigo is a pigmented spot, round or oval, with a diameter of about 5 mm, with well-defined borders, approximately regular.

Classification:

1. Lentigo simplex,
2. Actinic lentigo,
3. Reticulated lentigo.

1. Lentigo simplex

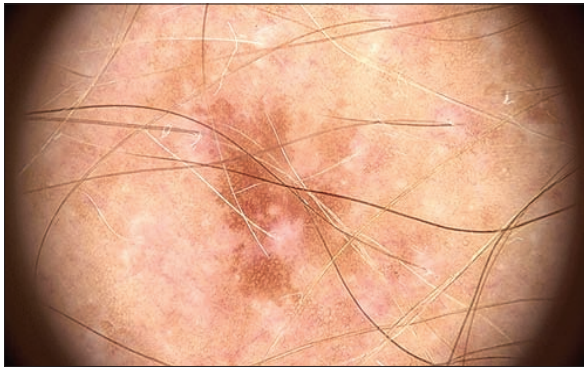


Figure 1. *Lentigo simplex*: Melanic lesion which preserves the symmetry on the longitudinal axis, which presents a regular, typical pigment network, with more accentuated pigmentation in the centre and more blurred towards the periphery, without vascular elements.

Criteria showing that the lesion is not malignant:

- Typical network;
- Uniform colour;
- Lack of vascularization.

2. Reticulated lentigo

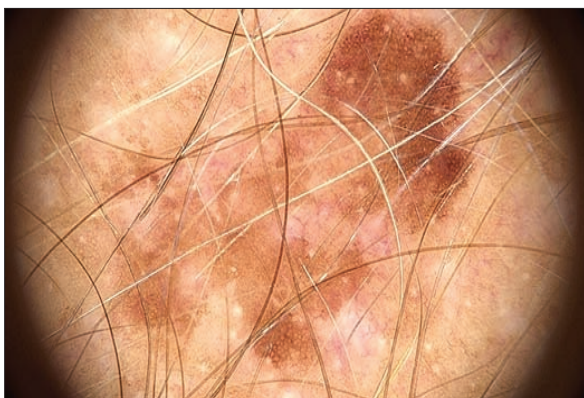


Figure 2. *Reticulated lentigo*: Relatively symmetrical melanic lesion on both axes, with approximately regular pigment network, with more accentuated pigmentation in the right upper quadrant and more blurred towards the periphery, presenting discoloured, round or round and oval areas.

It has discrete reddish areas, which intertwine with the discoloured areas.

Vascularization is absent.

B. Naevi

Melanocytic naevi or just naevi are benign proliferations of melanocytes that arise from the neural crest in foetal life. Congenital naevi are present from birth or shortly after birth, being larger than acquired naevi. The density of the naevi is proportional to the colour of the skin, the darker the skin the fewer the naevi.

An atypical naevus was chosen as an example.

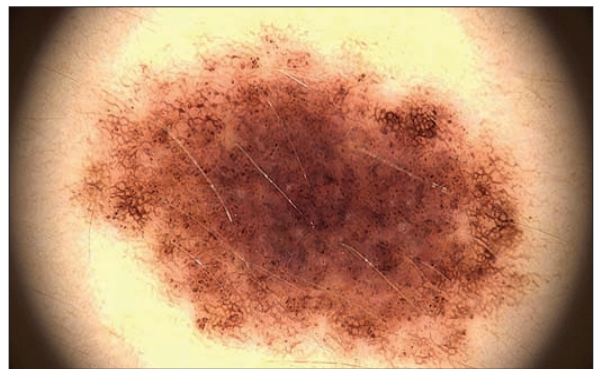


Figure 3. *Acquired compound nevocellular naevus* (with both epidermal and dermal structures), has a regular pigment network, being asymmetric, with a more accentuated bluish gray pigmentation area in the centre, with brown globules.

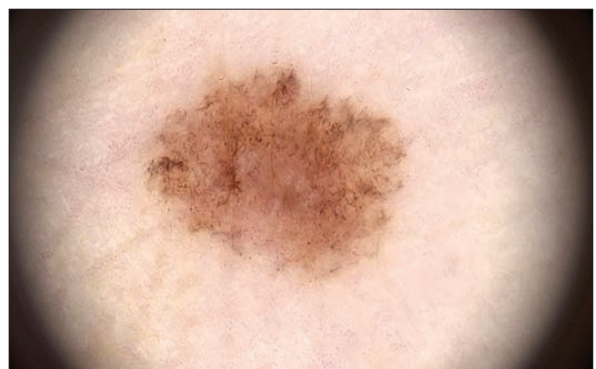


Figure 4. *Acquired symmetrical nevocellular naevus*, relatively nonhomogeneously coloured, showing a more discoloured central area, without pigment leakage, with globules in the periphery, visible especially in the lower half.

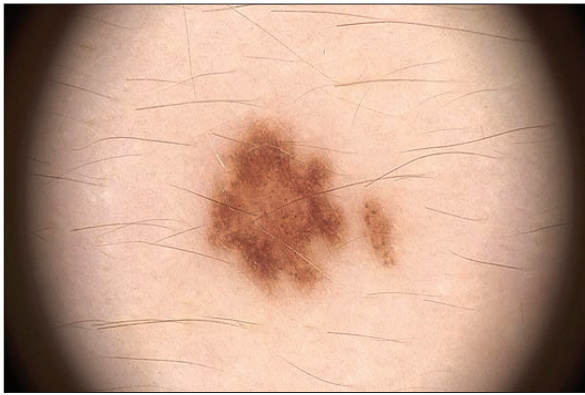


Figure 5. Acquired asymmetrical nevocellular naevus, with uneven and discontinuous pigmentation (an eccentric pigmented area is observed on the right side that does not seem to be related to the naevus itself) more accentuated in the periphery; with pigment network visible also peripherally, with unequal meshes. No leakage of pigment is observed, but the lesion has a more blurred and relatively nonhomogeneously coloured central area.

C. Basal cell carcinoma

Definition: Basal cell carcinoma is the most common malignant tumour derived from the basal cells of lower epidermis. It is the most common skin malignant tumour being determined by the cumulative solar radiation exposure, but it is not the only etiological factor.

Basal cell carcinoma is the most common form of human cancer, with an increasing annual incidence in the United States. When diagnosed early, most cases are treated in the dermatology practice, being to a very large extent curable.

Clinical forms:

Superficial or pagetoid BCC, nodular BCC, cystic BCC, ulcerated BCC, pigmented BCC, Morpheaform or sclerodermiform BCC, keloidal BCC, superficial BCC, polypoid BCC, Fibroepithelioma of Pinkus, metatypical BCC, cicatricial BCC, metastatic BCC – extremely rare.

Pigmented BCC is characterized by the presence of melanin pigmentation of tumour and stromal cells. The tumour is a black or blue-coloured papular or nodular lesion. Pearly border and telangiectasias may be present, but are difficult to recognize.

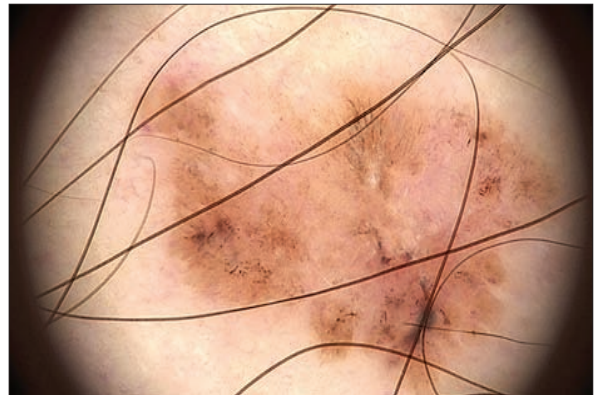


Figure 6. Pigmented BCC - circumscribed lesion that does not present a nonhomogeneously coloured pigmented network, with radial streaks visible especially in the 12 o'clock area, with a significant discreetly discoloured central part.

Dermoscopy helps establish the diagnosis, but biopsy and histopathological examination are essential.

From a dermoscopic point of view, BCCs are divided into pigmented and non-pigmented. Dermatoscopic signs with almost pathognomonic value: large globules with a slate appearance; brown bluish-gray blood cells; foliar elements; spoke-wheel-like structures; ulceration; dilated and branched capillaries.

Clinical case chosen for example: pigmented BCC (Fig. 6).

Clinical case: male, 60-year-old, location on calf.

Intradermal naevi .

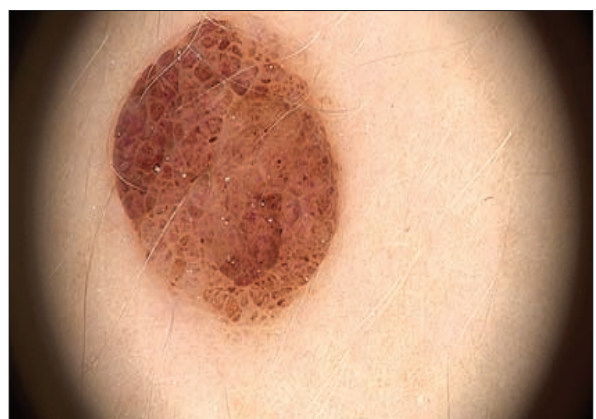


Figure 7. Typical image of intradermal naevus, without malignant potential

Conclusions

1. Dermoscopy plays a very important role in the daily practice of the clinician. The fact that the prevalence of malignant melanoma has increased in recent decades (due to the prevalence of melanomas in its early stages) is also due to the introduction of the dermatoscopic examination usually in dermatology practices. However, we should not forget the environmental factors, namely the location in a certain geographical region, the effects of industrialization, the ozone layer holes, the socio-cultural factors (easy access to the sun, trends related to fashion and beauty).

The suspicion of malignant melanoma was raised for 4 of the studied patients, but the diagnosis of malignant melanoma was invalidated by the histopathological examination. Patients with suspected melanoma who had melanic

lesions (dysplastic naevi) were subsequently monitored after 9 months, and no further changes were identified. Patients with atypical naevi were monitored after a minimum of 3 months and after a maximum of 6 months; the melanic lesions remaining unchanged.

2. In the current pandemic context, I consider it appropriate to purchase a videodermoscopy device that facilitates the diagnosis of malignant and premalignant dermatological conditions and that also performs the screening of skin cancer. Given the need for such an instrument in a geographical and socio-economic region, respectively the centralized (Craiova economic pole) South-West Oltenia region, the purchase of a videodermoscopy system is an opportunity to develop dermatological practice in the region, and for the patients it means faster access to computerized screening for melanic lesions.

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Conflict of interest:

This article represents the research topic of the project Sustainable Entrepreneurship in South-West Oltenia Region, HCOP 2014-2020. By means of the obtained funding, a videodermoscopy system was purchased.

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