

Cutaneous melanoma: digital dermoscopy - essential tool for positive diagnosis

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Abstract

Cutaneous melanoma is a "perfid", aggressive and hard to be treated malignant tumor in case of delayed diagnosis. However, patients still have a chance to escape progressive disease if the lesion is recognized early, when the surgical approach is curative. Dermoscopy has the important advantage of rapidity and non-invasivity in a field with (still) contradictory algorithms of diagnosis and treatment. The recognition of the elementary dermoscopic lesions enables accurate diagnosis for cutaneous melanoma. In our opinion, dermoscopy appears compulsory in the routine dermatologic examination. *In vivo* microscopy (dermoscopy) together with histopathology (plus or minus immunohistochemistry) seem, at present, to provide the most reliable diagnosis of melanoma.

Keywords: melanoma • pseudopodes • veil • *in vivo* microscopy • vasculature • melanocytic nests • tumoral invasion • risk factors

No human cancer is as aggressive as melanoma [1, 2]. Cutaneous melanoma is a quiet, but rapid invasive life threatening tumor. The extreme aggressivity might be avoided by prophylaxis:

- the patient and the physician should identify the risk factors for melanoma [3, 4] (cutaneous phototype, familial heritage of moles and melanoma, aggressive exposure to sunlight, a significant number of moles etc.); this way implies a surveillance schedule, including a periodical clinical and/or dermoscopic examination;
- revealing as early as possible a cutaneous melanoma, because the earlier the lesion is recognized, the faster (and optimal) therapy can be adopted [5, 6];

The images presented here are selected from 42 cases of patients diagnosed with cutaneous melanoma by digi-

tal dermoscopic (Fotofinder, Nikon Coolpix 4500, and Immersiosal) and histopathologic criteria. Identification of elementary dermoscopic lesions enables the accurate diagnosis for cutaneous melanoma [7–11].

Although there are several algorithms for diagnosis of pigmentary lesions, the surface microscopical identification of elementary dermoscopic lesions should become the routine step before the surgical approach. We support the idea that dermoscopy is more than an 'extension of the clinician eye' [7]. Using dermoscopy, the accuracy of the diagnosis of cutaneous melanoma may increase from 65–80% to 70–95%, depending on clinician's and/or dermoscopist's training, respectively.

In conclusion, our images intend to be an argument for the obligativeness of the dermoscopic technique *before* the surgical procedure.

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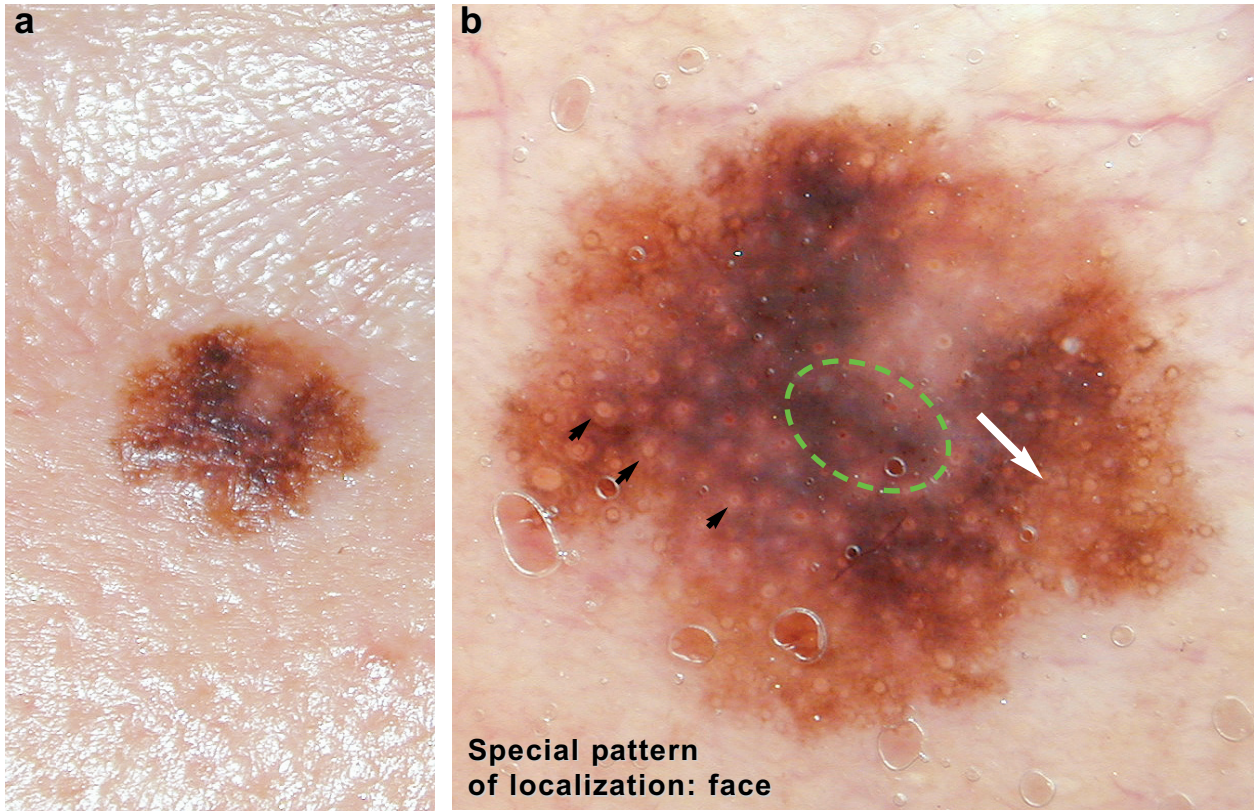
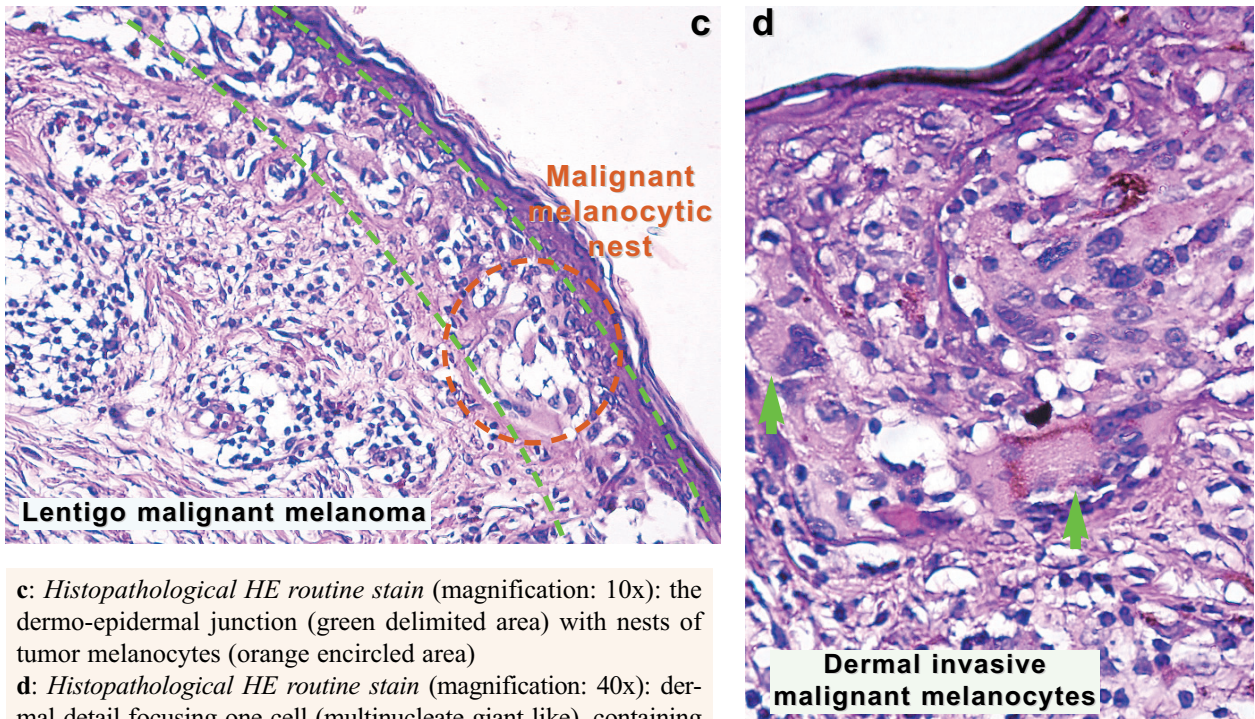


Fig. 1 Lentigo malignant melanoma, Clark II, Breslow under 1mm.

a: *Clinical aspect:* 49 years Caucasian female, III cutaneous phototype, outdoors, presenting a pigmented tumor localized right infrapalpebrally. The chromatic picture is not uniform, the borders are unregulated, but well defined.

b: *Dermoscopy of a:* location specific pattern of the face, showing an asymmetric appearance, with a pseudonetwork (white arrow), brown asymmetric follicular openings (black arrowheads), slate gray dots (green encircled area), brown rhomboidal structures, 5 colors (tan, brown, black, white, blue-gray).



c: *Histopathological HE routine stain* (magnification: 10x): the dermo-epidermal junction (green delimited area) with nests of tumor melanocytes (orange encircled area)

d: *Histopathological HE routine stain* (magnification: 40x): dermal detail focusing on one cell (multinucleate giant-like), containing melanin pigment in its cytoplasm and other melanocytic cells with atypical, voluminous nuclei (green arrows).

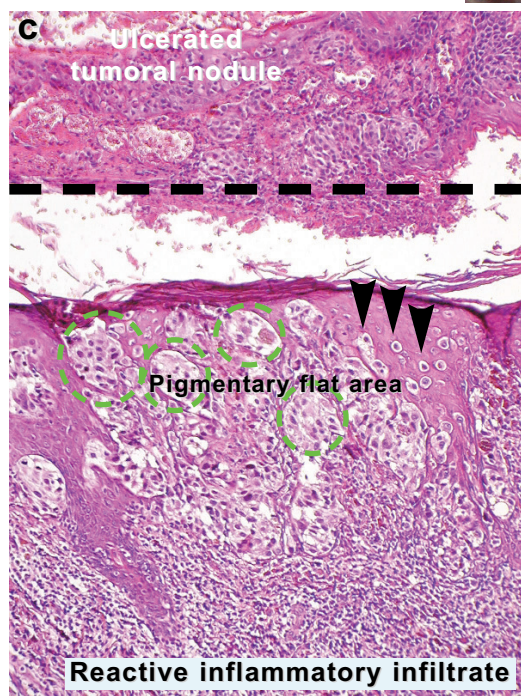
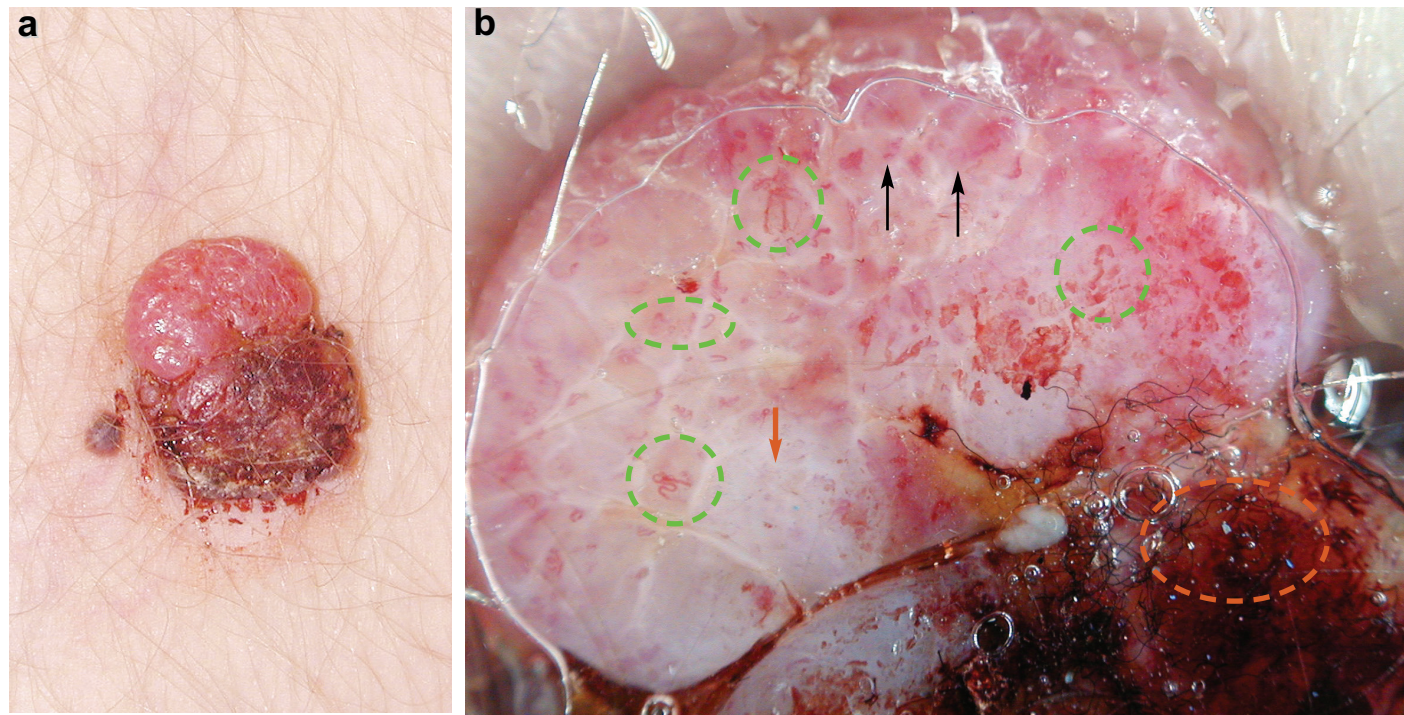
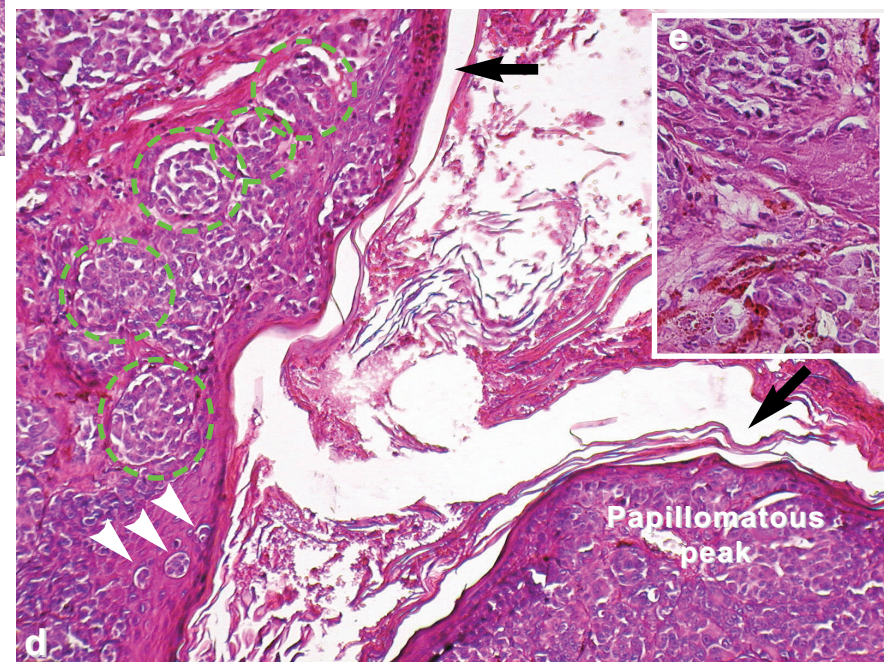


Fig. 2 Superficial spreading melanoma, Clark V, Breslow 5 mm, with 2 extensive nodules of vertical growing (one pedunculated, the other ulcerated) and with regressive areas.
a: Clinical aspect: 28 years Caucasian male, I cutaneous phototype, indoors, elevated brown-red bleeding tumor on the right thigh
b: Dermoscopy of a: shows an impressive polymorphic pattern of vessels: bizarre, pinpoint, irregular linear (green encircled area), milky red globules (black arrows); the white-blue veil (orange arrow) is impressive, occupying a big part of the lesion, but not the entire one; the pigmentary network is disrupted (orange encircled area), at the periphery of the lesion, 6 colors: red, white, blue, black, tan, dark brown
c: Histopathological HE routine stain (magnification: 10x): spreading superficial aspect with malignant nests of cells (green encircled area) and individual cells (black arrowheads); the aspect is displayed under the ulcerated tumor nod-



ule; the invasion has in situ melanoma component beyond three rete ridges of its invasive component (unlike nodular melanoma)
d: Histopathological HE routine stain (magnification: 20x): the invasive tumor nodule has a papillomatous pick (black arrows), malignant melanocytes nests (green encircled areas). This field demonstrates the ascension of the grouped cells in epidermis (white arrowheads).
e: Histopathological HE routine stain (magnification: 40x): details of the malignant melanocytic cells; high cellular density, frequent atypical cells.

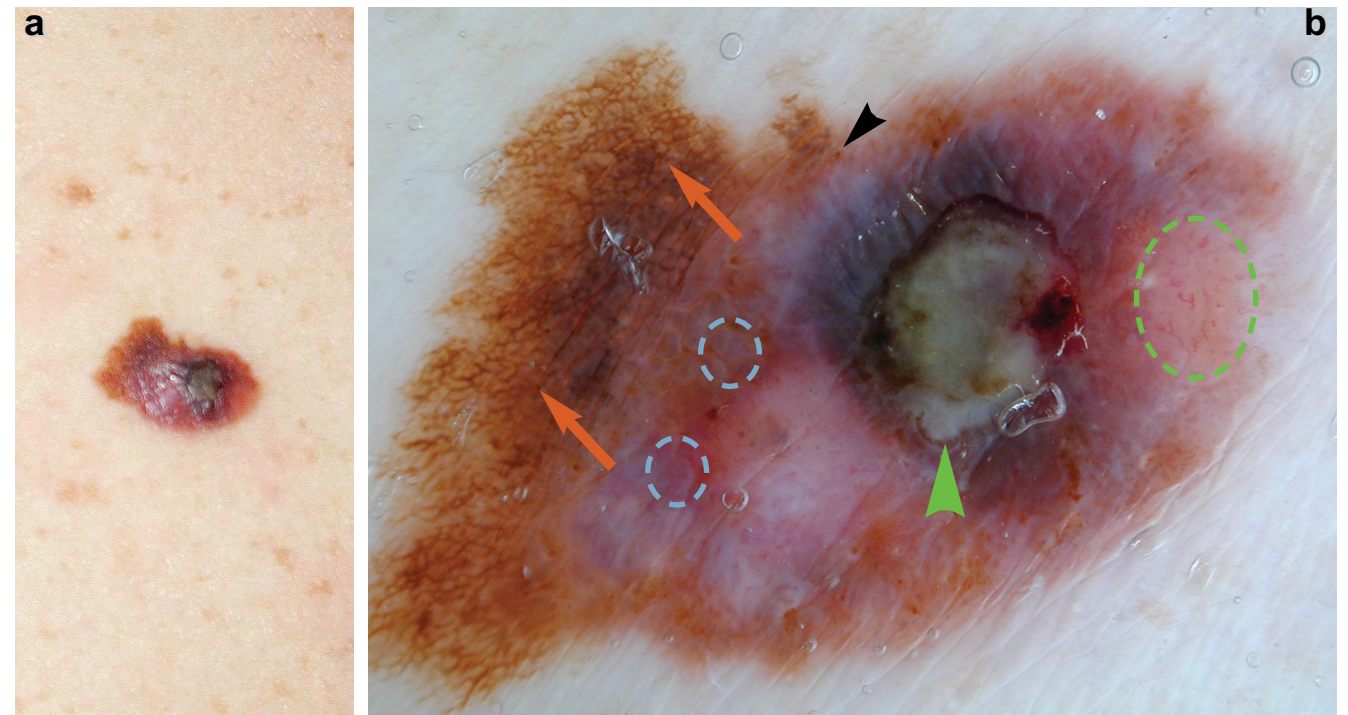
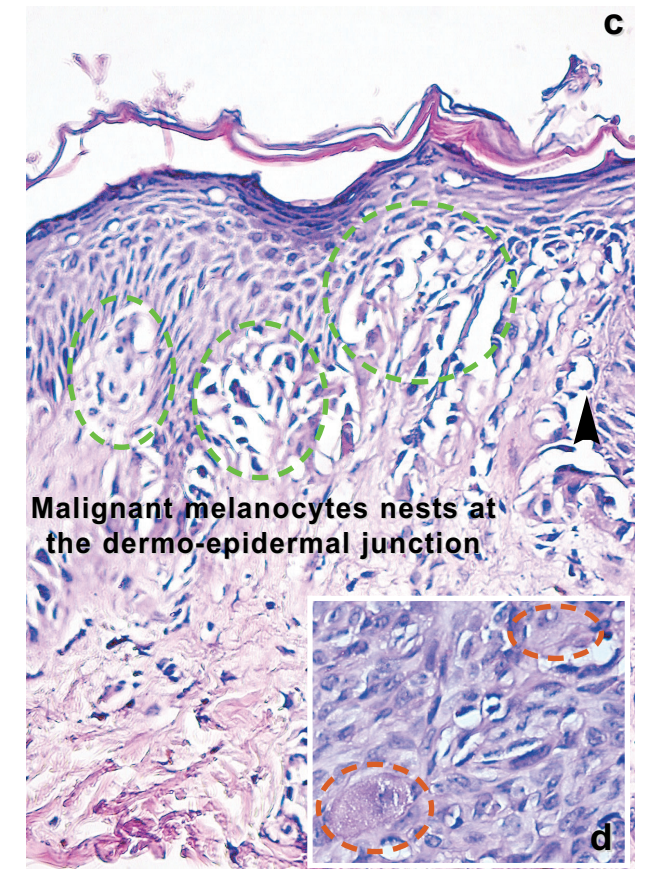


Fig. 3 Superficial spreading melanoma with vertical growing nodule, Clark IV, Breslow 1,2 mm
a: Clinical aspect: 38 years Caucasian female, II cutaneous phototype, indoors, presenting a tumor pigmented plaque sub-scapular right, asymmetrically, with chromatic polymorphism; it was traumatized and pruriginous
b Dermoscopy of a: the asymmetrically patterned lesion with 6 colors; pigmentary peripheral positive network (orange arrows), unregulated; radial streaming, unregulated vasculature (bizarre polymorph pattern- and pinpoint vessels- green encircled area), milky-red (blue encircled areas) and positive veil (green arrowhead), brown globules (black arrowhead), coagulated blood. Note also the scar-like depigmented areas.
c: Histopathological HE routine stain (magnification: 20x): spreading superficial aspect with malignant melanocytic cells organized in nests at the dermal epidermal junction (green encircled areas) or ascending in epidermis
d: Histopathological HE routine stain (magnification: 40x): detail of the growing vertical nodule with voluminous malignant melanocytes containing pigment (orange encircled areas); many atypical nuclei, melanic pigment in the cytoplasm.



References

- Chin L, Garraway LA, Fisher DE. Malignant melanoma: genetics and therapeutics in the genomic era. *Genes Dev* 2006; 20: 2149-82.
- Miller AJ, Mihm MC Jr. Melanoma. *N Engl J Med* 2006; 355:51-65.
- Green MH, Clark WH, Tucker MA. The prospective diagnosis of malignant melanoma in a population at high risk. *Am Intern Med* 1985; 102: 458-65
- Pehamberger H, Steiner A, Wolff K. In vivo epiluminescence microscopy of pigmented skin lesions. *J Am Acad Dermatol* 1987; 17: 571-83
- Marks R. Epidemiology of melanoma. *Clin Exp Dermatol* 2000; 25: 459-63
- Nestle FO, Kerl H. Melanoma in Dermatology, in Bologna JL, Jorizzo JL, Rapini RP, 2003, Mosby, Toronto, p. 1789-1795
- Stolz W, Braun-Falco O, Bilek P et al. Color Atlas of

- Dermatoscopy, second edition, Blackwell Publishing, Oxford, 2002, p. 101-118
- Kaya G, Braun RP. Histopathological correlation in dermoscopy, in Atlas of dermoscopy, Marghoob AA, Braun RP, Kopf AW, Taylor and Francis, London, 2004, p. 23-43
- Menzies SW. Superficial spreading melanoma, in Atlas of dermoscopy, Marghoob AA, Braun RP, Kopf AW, Taylor and Francis, London, 2004, p. 209-221
- Menzies SW, Crotty KA, Ingvar C, McCarthy WH. An Atlas of Surface Microscopy of Pigmented skin lesions: dermoscopy, The McHraw-Hill Companies, Inc., Sydney, 2003, p. 6-30, 92-112
- Johr R, Sozer HP, Argenziano G et al. La dermoscopie. Ed. Med. Com., Paris, 2006

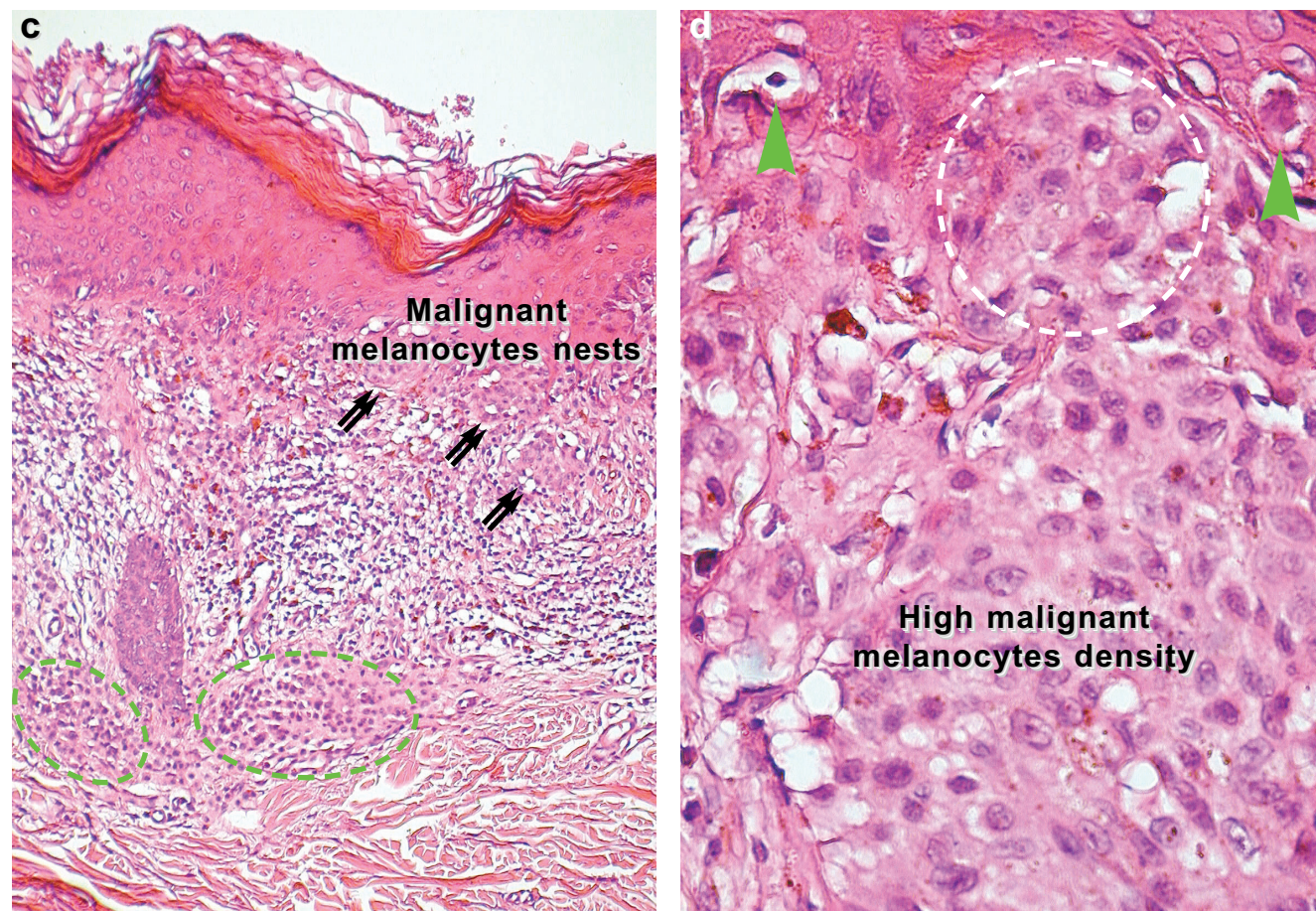
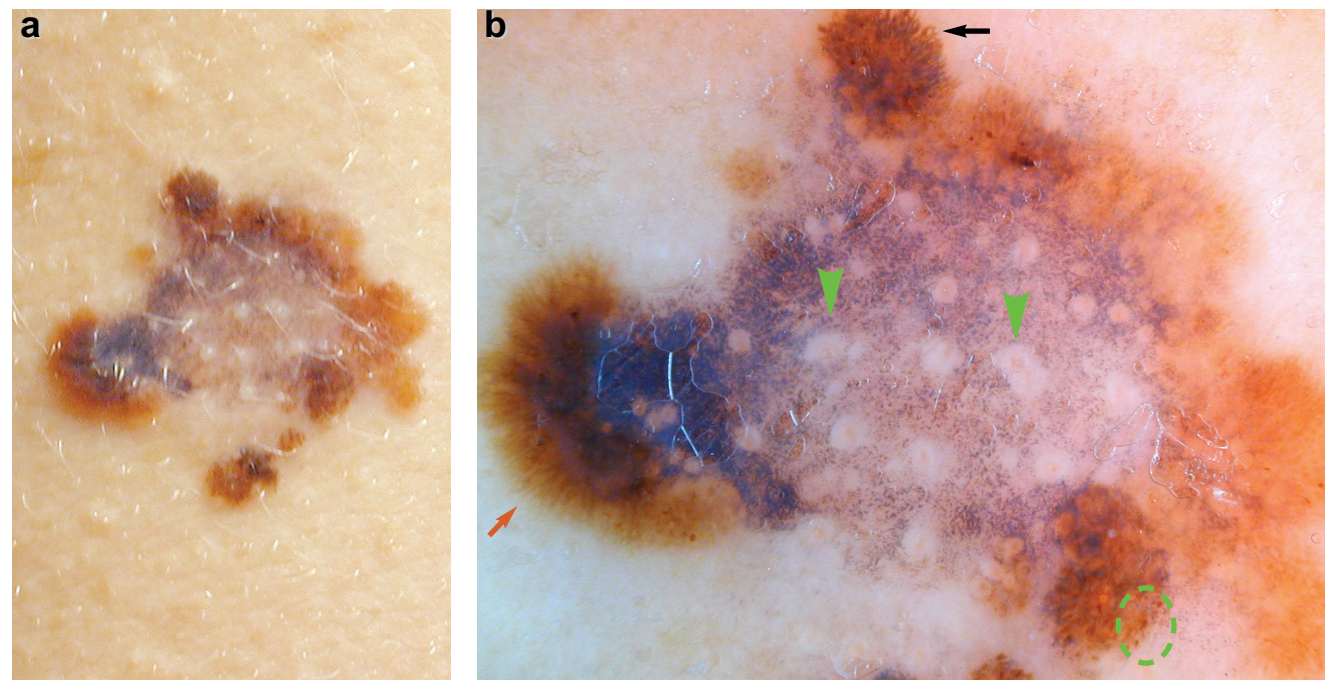


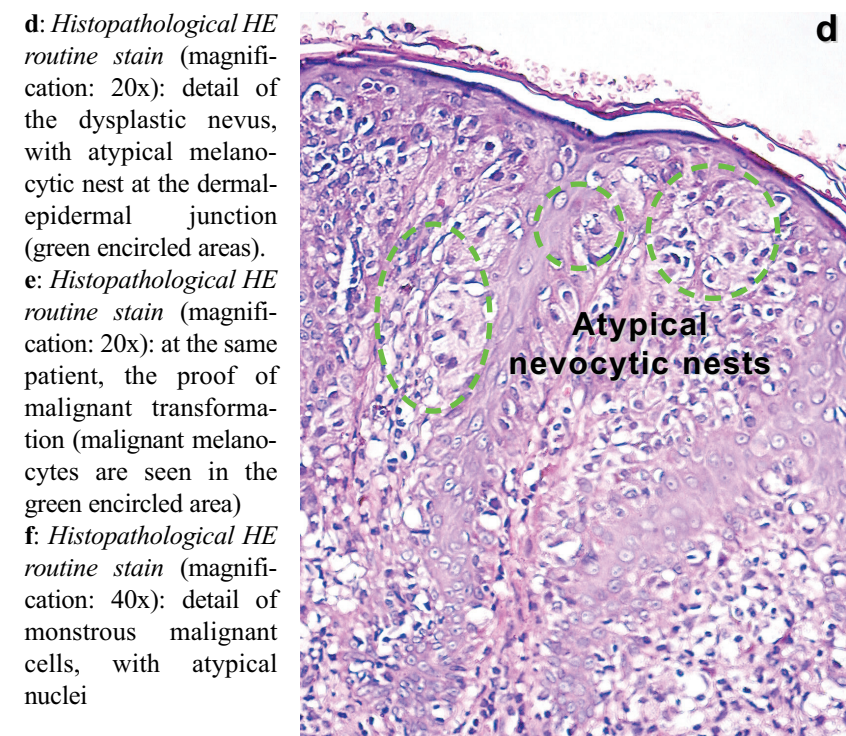
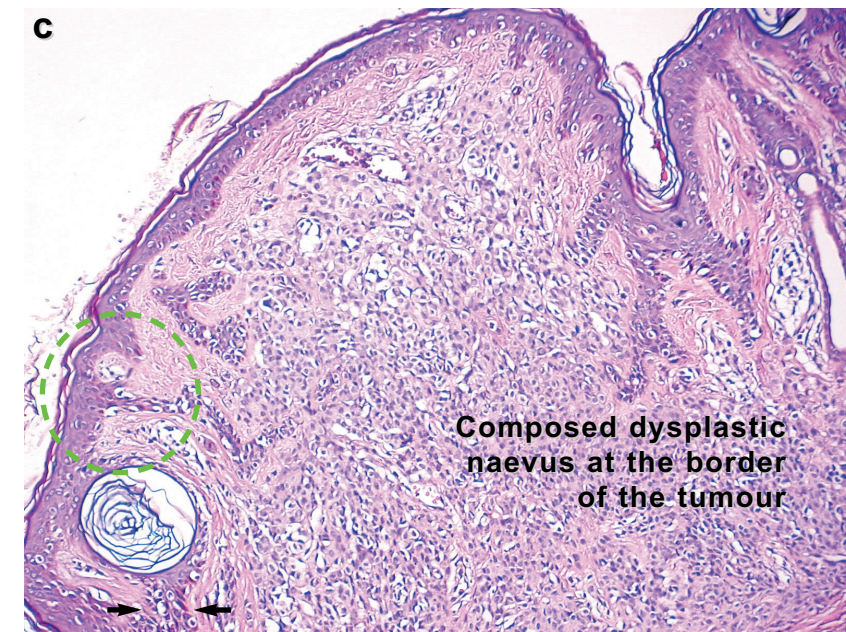
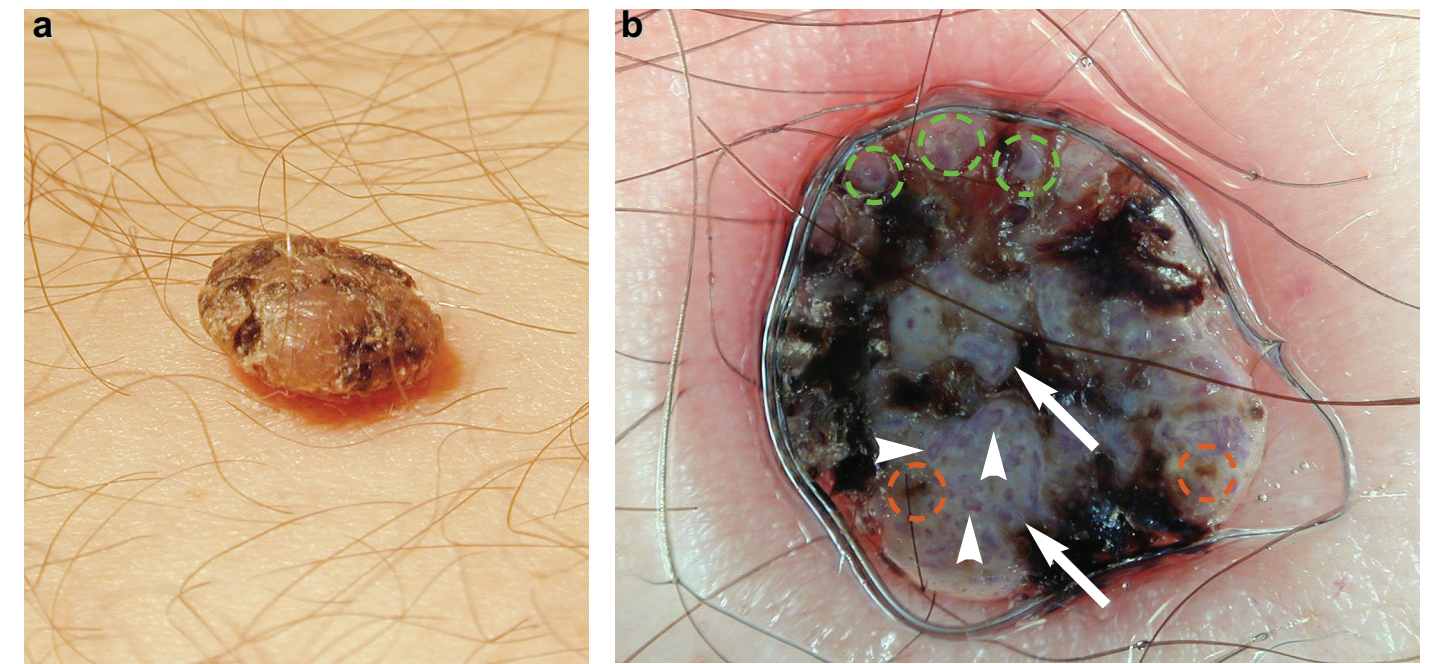
Fig. 4 Cutaneous melanoma developed on congenital nevus, Breslow under 1mm.

a: Clinical aspect: 28 years Caucasian female, III cutaneous phototype, indoors, presenting a tumoral pigmented plaque on the back, developed on a congenital mole; the border is unregulated, there is a lack of symmetry and chromatic polymorphism

b: Dermoscopy of a: this asymmetric (over every axes), multicolored pattern (tan, dark brown, black, gray-white, blue) lesion has also pseudopods (“bulbous projections”-black arrow) radial streaming (orange arrow), a prominent unregulated peripheral network, structureless areas (more than 20% of entire lesion), brown globules at the periphery (green encircled area).

c: Histopathological HE routine stain (magnification: 10x): shows nevocytes nests (green encircled areas), which may be distinguished from the polymorphism of architecture presentation of the melanocytes in malignant melanoma under immunohistochemistry; malignant melanocytes organized in nests (black double arrows)

d: Histopathological HE routine stain (magnification: 40x): a great cellular density of malignant pigmented cells, nuclear significant atypia. Some of them are ascending in the epidermis, isolated (green arrowheads); nests of atypical melanocytes at the dermal-epidermal junction (white encircled area).



d: Histopathological HE routine stain (magnification: 20x): detail of the dysplastic naevus, with atypical melanocytic nest at the dermal-epidermal junction (green encircled areas).

e: Histopathological HE routine stain (magnification: 20x): at the same patient, the proof of malignant transformation (malignant melanocytes are seen in the green encircled area)

f: Histopathological HE routine stain (magnification: 40x): detail of monstrous malignant cells, with atypical nuclei

Fig. 5 Cutaneous melanoma developed on a pigmentedary nevus

a: Clinical aspect: 47years Caucasian male, III cutaneous phototype, indoors, presenting an exophytic tumor on the abdomen, skin colored with brown-black areas at the surface

b: Dermoscopy of a: the blue-white veil doesn't occupy the entire lesion (white arrow), milky-red positive (encircled green areas), unregulated vasculature (white arrowhead), brown globules (encircled orange areas), and many colors: red, white, blue, black, tan, and brown

c: Histopathological HE routine stain (magnification: 10x): the tumor extremity contains the dysplastic compous nevus; note the ‘bridge’ (black arrows) created by cellular nests between the elongated rete ridges and the surface of the epidermis; there is a melanocytic lentiginous hyperplasia (green encircled area)