

## Melanomas Arising On Tattoos: The “Disruption Sign”

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### To the Editor,

Tattoos may be related to a number of dermatological complications: cutaneous neoplasms, particularly melanomas (cMs), have been reported, but the pathogenesis remains controversial [1-4]. Forty-three cMs on tattoos (cMT) have been reported, occurring more frequently in males and younger patients, with a higher mean Breslow thickness, possibly related to a delayed diagnosis [5,6]. No case series of cMT dermoscopic features have been reported and we report four cases (Table 1, Figures 1 and 2).

The most common dermoscopic feature was the atypical reticular pattern (4/4, 100%), followed by grayish-blue areas (3/4, 75%) and homogeneous areas (2/4, 50%). Cobblestone pattern, blue-gray veil, gray circles, regression structures, dots/globules, and peppering were observed in 1/4 cMTs.

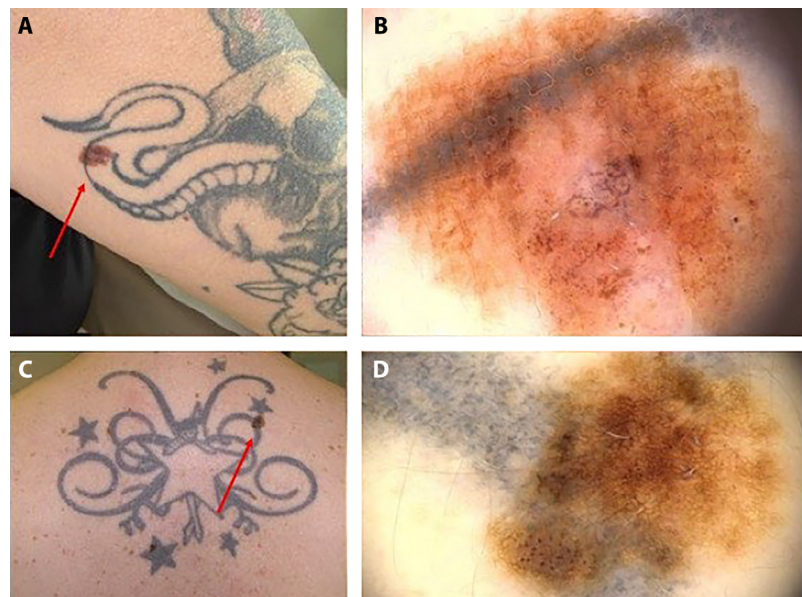
Grayish-blue areas were likely related to the black ink as they were not present in the cMT arising on the yellow tattoo.

All the cMTs were atypical clinical lesions, representing clinical “ugly ducklings,” but they had not been noticed by the patients. The atypical clinical features according to the ABCDE rule were a hint of the malignant nature and even more worrisome than the dermoscopic elements. Indeed, tattoos represent an obstacle to self- and medical clinical examination as well as to dermoscopic assessment. The presence of superimposed ink can mimic a blue-gray veil and mask the vascular pattern and the borders. As shown in Cases 1 and 2, at low magnification, the ink can create two different dermoscopic areas with a prominent diversity (Figures 1B–D).

The harmonic features and image of the tattoos had been altered by the cMT (“disruption sign”), representing a clue of the subsequent origin of the lesion. Indeed, usually

**Table 1. Clinical and Dermoscopic Features of the Reported Cases.**

Case 1	F	50	Arm	Melanoma in situ	Homogeneous areas Cobblestone Atypical reticular Gray circles Grayish-blue areas
Case 2	F	41	Dorsum	Melanoma, pT1a, Breslow 0.3 mm	Grayish-blue areas Atypical reticular Homogeneous areas Dots/globules
Case 3	M	48	Dorsum	Melanoma, pT1a, Breslow 0.5 mm	Atypical reticular Peppering Blue-gray veil Regression structures
Case 4	M	46	Torax	Melanoma, pT1a, Breslow 0.5 mm	Grayish-blue areas Atypical reticular

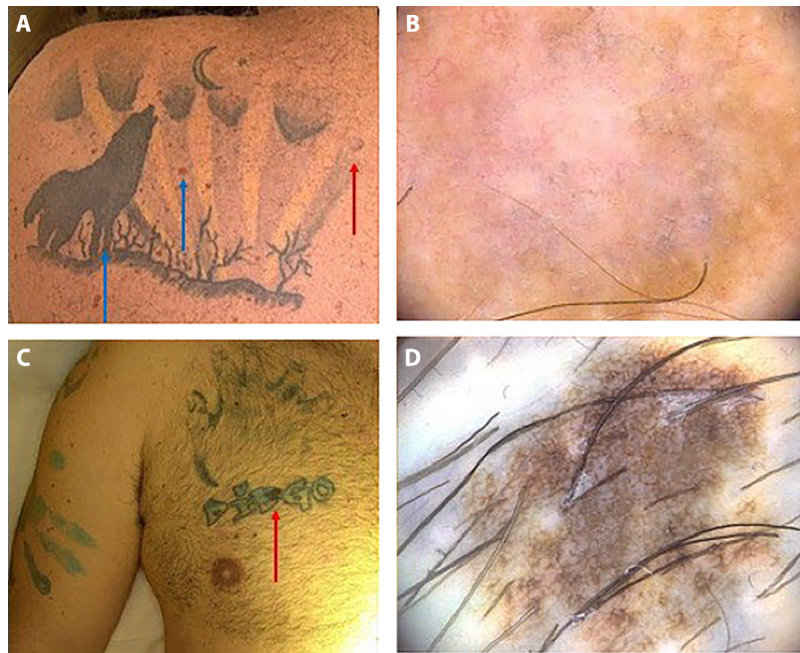


**Figure 1.** Clinical (A,C, red arrows) and dermoscopic (B,D) features of the excised melanomas on tattoos.

a professional tattoo is performed around a pre-existing nevus, sparing its borders and aesthetic appearance (Figure 2A, blue arrows). The drawing itself can help the clinician to monitor the evolution of the pigmented lesion at sequential images, representing points of reference.

In those tattoos with complex drawings and multiple nevi or photodamage (Figures 2A), cMT may be misjudged as part of the tattoo itself.

Our goal is to raise awareness of cMT and emphasize the importance of a thorough clinical and dermoscopic examination. Further studies and the new available technologies are required to elucidate cMT diagnostic features in order to avoid unnecessary excisions with a heavy cosmetic impact. CMs may alter the harmony of the colour and shape of the pre-existing tattoo (“disruption sign”) and represent a clinical “ugly duckling.”



**Figure 2.** Clinical (A,C, red arrows) and dermoscopic (B,D) features of the excised melanomas on tattoos. Blue arrows represent those areas where the nevus is spared by tattoo.

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