Dermoscopy Pattern, Histopathology and Immunophenotype of Primary Cutaneous B-Cell Lymphoma Presenting as a Solitary Skin Nodule

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\textbf{Key Words}
Dermoscopy · Primary cutaneous B-cell lymphoma · Solitary skin nodule · Immunophenotype

\textbf{Abstract}

\textbf{Importance:} To date, no dermoscopic features have been described for the diagnosis of primary cutaneous B-cell lymphoma (PCBCL). This tool might be helpful for the clinical differential diagnosis in the context of single erythematous nodules of the skin. \textbf{Observations:} Ten cases of PCBCL, presenting clinically as solitary red/pinkish nodules, were retrospectively retrieved. Patient data were collected along with dermoscopic and histopathological features of each lesion. Most lesions (9/10) showed white circles with a salmon-colored background/area (6 lesions), scales (7 lesions), arborizing vessels (5 lesions) or a polymorphous vascular pattern (2 lesions). Histology revealed a cutaneous marginal zone lymphoma in 6 lesions, a follicle center lymphoma in 2 lesions and a diffuse large B-cell lymphoma in 2 lesions. \textbf{Conclusions and Relevance:} Dermoscopic examination may be helpful for improving the clinical recognition of PCBCL although skin biopsy remains mandatory.

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Case Series

Ten cases of PCBCL, presenting clinically as a solitary skin red/pinkish nodule and diagnosed between January 1, 2007, and May 31, 2014, were retrospectively retrieved from the archives of the Pathology Unit of the University Federico II of Naples. For each patient, clinical characteristics including age and sex, location and appearance of the lesion, and dermoscopic images were collected. Clinical and dermoscopy images of each lesion were obtained using a dermoscopy lens (DermLite Foto lens; 3Gen, LLC, Dana Point, Calif., USA) coupled with a digital camera (Nikon Coolpix 3100; Nikon Corp., Tokyo, Japan). For each biopsied tumor, 4-μm sections were cut from paraffin-embedded blocks and used for routine staining with hematoxylin and eosin and detailed immunophenotypic analysis. Immunohistochemistry was performed using a panel of antibodies, including CD20, CD79a, CD10, CD3, CD5, bcl-6, bcl-2, CD21, MUM1 and Ki-67/MIB-1. Initially, three independent investigators (G.A., M.S. and V.P.), blinded to the clinical and histopathological diagnosis, evaluated the dermoscopic images for vascular pattern and additional dermoscopic features. Afterwards, the final histopathological diagnosis for each case was confirmed by three of us (M.M., G.D.R. and S.S.).

The clinical characteristics and follow-up data of the 10 patients with PCBCL included in the study are presented in Table 1. The tumors were obtained from 6 men and 4 women, whose age ranged from 20 to 73 years (median age, 51.9 years). The mean age was 44.5 years for marginal zone lymphoma, 58.5 for follicle center lymphoma and 76 for large B-cell lymphoma. None of the patients had a history of noncutaneous lymphoma or leukemia. Clinically,
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all lesions presented as a single red/pinkish cutaneous nodule, with only 1 lesion showing ulceration. Four lesions were located on the trunk, 3 on the upper limbs, 2 in the head-neck region and 1 on the lower limb (table 1).

Dermoscopically, 9 lesions showed white circles with a salmon-colored background/area (6 lesions), scales (7 lesions), arborizing vessels (5 lesions) or a polymorphous vascular pattern (2 lesions; fig. 1; table 2). In all cases histology revealed features of conventional PCBCL, typified by a dense lymphoid infiltrate within the dermis, with diffuse and strong positivity for CD20. Six cases were diagnosed as cutaneous marginal zone lymphoma because of a patchy, nodular or diffuse infiltrate of small centrocyte-like cells involving sometimes the superficial part of the subcutis, with immunohistochemistry revealing positivity for CD20, CD79a and bcl-2 and negativity for bcl-6 and CD10. Two cases were diagnosed as cutaneous follicle center lymphoma because of a diffuse infiltrate of small-medium cleaved cells expressing CD10 and bcl-6 (but not bcl-2) and a low proliferation index. The remaining 2 lesions were diagnosed as cutaneous diffuse large B-cell lymphoma and were characterized by a dense and diffuse infiltrate predominantly composed of large round cells. These were positive for bcl-2 and MUM1 but negative for CD10, with frequent mitoses and a high degree of proliferation evaluated by Ki-67.

**Discussion**

In this case series we provide a first indication that PCBCL exhibits a dermoscopic pattern, which is different from other diseases presenting as solitary red/pinkish nodules. Most of our lesions showed dermoscopically white circles with a salmon-colored background/area, scales and/or arborizing vessels. The latter are commonly found in basal cell carcinoma as sharp in focus branching vessels. In our cases, arborizing vessels were more blurred and of smaller caliber. Of course, the differential diagnosis of solitary pink nodules is much wider and includes capillary angioma, pyogenic granuloma, intradermal nevus, Spitz nevus and nodular melanoma, to name but a few. PCBCL can be misdiagnosed as one of these tumors when presenting as a solitary nodule, even if clinical features are often useful for the diagnosis [4, 5]. Dermoscopy can be of help in this context because of the specific features that can be found in these different entities (fig. 2), although histopathology is mandatory for the correct diagnosis of PCBCL.

To date, no previous studies on dermoscopy of PCBCL have been published in the literature, although an increasing interest toward dermoscopy of cutaneous lymphomas is rising among researchers. Several observations regarding dermoscopic features of lymphomatoid papulosis, mycosis fungoides and pseudolymphomatous folliculitis have recently been published [6–8]. Comparing our series with the studies mentioned above, the only similar finding is the presence of thin arborizing vessels in pseudolymphomatous folliculitis, as shown in the majority of our PCBCLs.

In conclusion, the presence of a single erythematous nodule should raise the ‘red flag’ and prompt careful clinical and dermoscopic assessment. The identification of a combination of dermoscopic features including white circles, salmon-colored background/area, scales and/or arborizing vessels may be helpful to include PCBCL into the differential diagnosis and to prompt excision.

**Statement of Ethics**

EC approval waived.

**Disclosure Statement**

The authors declare no conflicts of interest.

**References**