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Vascular patterns in basal cell carcinoma: Dermoscopic, confocal and histopathological perspectives.

Lupu M, Caruntu C, Popa MI, Voiculescu VM, Zurac S, Boda D. Oncol Lett. 2019 May;17(5):4112-4125. doi: 10.3892/ol.2019.10070. Epub 2019 Feb 25.

ABSTRACT

Basal cell carcinoma (BCC) is the most prevalent skin cancer in the Caucasian population. A variety of different phenotypic presentations of BCC are possible. Although BCCs rarely metastasize, these tumors commonly destroy underlying tissues and should therefore be treated promptly. As vascular formation and angiogenesis are indicators of tumor development and progression, the presence of blood vessels, their morphology and architecture are important markers in skin lesions, providing critical information towards pathogenesis and diagnosis. BCC commonly lacks pigmentation, therefore it is important to emphasize the usefulness of vascular feature detection, recognition, quantification and interpretation. To answer the question of whether vascular patterns observed on dermoscopy, reflectance confocal microscopy (RCM) and histopathology might reflect the biologic behavior of BCCs, we undertook this review article. Several studies have sought, by various means, to identify vascular features associated with the more aggressive BCC phenotypes. Dermoscopic vascular pattern assessment can facilitate diagnostic discrimination between BCC subtypes, more aggressive BCCs displaying less or no pink coloration and a relative absence of central tumor vessels. RCM, a novel, non-invasive imaging technique, allows for the quantification of blood vessel size, density, and flow intensity in BCCs. BCCs are distinguished on RCM chiefly by vessels that branch and intertwine between neoplastic aggregates, a pattern strongly reflecting tumor neo-angiogenesis. The analysis of these vascular morphological and distribution patterns can provide further support in the diagnosis, assessment, or monitoring of BCCs. Histopathology shows significantly higher microvessel densities in the peritumoral stroma of BCCs, when compared to normal skin or benign tumors. This angiogenic response in the stroma is associated with local aggressiveness, therefore the quantification of peritumoral microvessels may further assist with tumor evaluation. How dermoscopy and RCM vascular patterns in BCC correlate with histopathological subtype and thus help in discriminating aggressive subtypes definitely deserves further investigation.

KEYWORDS: basal cell; biomarkers; carcinoma; confocal reflectance; dermoscopy; histology; microscopy; microvessels PMID:30944604 PMCID:PMC6444327 DOI:10.3892/ol.2019.10070 Free PMC Article