Reflectance confocal microscopy characteristics for melanocytic nevi

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To the Editor: Melanocytic nevi are a common benign tumor disease in dermatology and can occur in all ages and parts of the skin surface. There are different clinical manifestations in pigmented nevus skin lesions. It is difficult to distinguish other diseases which have similar clinical manifestations of pigmented nevus if medical diagnosis is based solely on the color, shape, or clinical experience of the lesion. Nevi are mainly divided into three categories: junctional (melanocytes confined to the epidermis only), intra-dermal (confined to the dermis only), and compound (both an epidermal and a dermal component). The relationships between these three different types of nevi and what factors contribute to the formation of one type *vs.* another are still unclear.[1]

Optical instrumentation for imaging is an important component of biological and medical science progress. The range of applications of biomedical optics devices is very broad, from medical diagnostics, monitoring treatment to clinical research.[2] Most dermatologists are aware of the benefits of dermoscopy, but few are familiar with laser-scanning confocal microscopy. Reflectance confocal microscopy offers high-resolution and non-invasive skin imaging, which can help avoid obtaining unnecessary biopsy specimens, and its principle relies on low-power lasers to emit near-infrared light (830 nanometers). Reflectance confocal microscopy can image the epidermis and papillary dermis but is limited to an imaging depth of about 200 μm.[3] Because of different components of cells and tissue, reflectance imaging can be advantageous for probing the structure and organization of biological samples.[4]

A total of 158 surgical resections and pathological biopsies of melanocytic nevi, which had corresponding reflectance confocal microscopy images, were collected from January 1, 2017 to November 30, 2018. The purpose of this study was to analyze the retrospective description for this study, to determine the characteristic features of reflectance confocal microscopy in pathologically confirmed junctional nevi, intra-dermal nevi, and compound nevi. Blue nevi, Spitz nevi, Sutton or Meyerson's nevi or other unusual nevus variants were excluded from the study; nevus grown in the hands and feet were excluded.

Reflectance confocal microscopy analysis had revealed ringed or meshwork structures in majority of junctional nevi. Intra-dermal nevi showed a dense or sparse of large bright cells nests, whereas compound nevi showed combined mode. Reflectance confocal microscopy analysis can easily and reliably detect different types of melanocytic nevi. A single small, bright polygonal cell in the dermal-epidermal junction layer outlined the dermal papillae, creating a ringed or meshwork structures. Nevus cells were clumped across the dermal papilla fossa, clearly showing the aggregation of melanocytes within the dilated dermal papilla, forming a dense or sparse large bright cells nests on reflectance confocal microscopy [Figure 1].

Melanocyte nevi are benign hyperplasia of melanocytes in the epidermis and dermis. The current classification of sputum is based on the distribution pattern of melanocytes observed by histopathology. The data indicate that the melanin nevi diagnosing process does not mechanically depend on a set of histological parameters for clinical performance, and other examination methods are also demanded. Reflectance confocal microscopy can present a more accurate characterization of benign and malignant lesions, giving its powerful characterization of melanocyte

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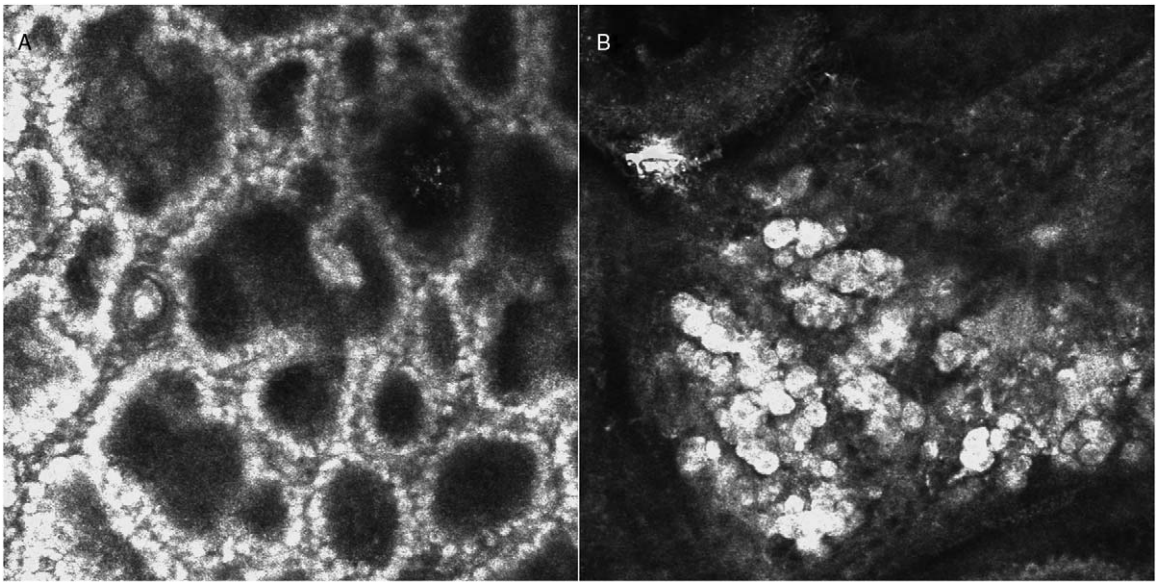

Figure 1: Characteristics of different types of pigmented nevi in reflectance confocal microscopy. (A) Ringed architecture constituted by edged papillae. (B) A dense or sparse large bright cells nests (original magnification × 30).

morphology and organization and probably reflecting different biological substrates and behavior.

Medical imaging has dramatically transformed the way clinicians evaluate, diagnose, monitor, and treat diseases. The highly visual nature of cutaneous diseases makes digital imaging valuable for dermatologists in daily practice. A variety of techniques including specialized photography, surface microscopy, ultrasound, dermoscopy, laser Doppler perfusion imaging, confocal microscopy, and optical coherence tomography, are currently being used to examine the skin. And reflectance confocal microscopy correlates well with dermoscope and provides further information regarding the tissue and cell morphology. It will probably further increase *in vivo* diagnostic acumen and provide new insights into the *in vivo* dynamics of melanocytic neoplasms.[5] And reflectance confocal microscopy is a valuable non-invasive tool to diagnose skin tumors. Thus our ideal goal for melanin nevi research is to use non-invasive and available means to identify and classify nevi.

We reported reflectance confocal microscopy characteristics of melanocytes nevi. Reflectance confocal microscopy is a valuable non-invasive tool to diagnose skin tumors. It can be used, in particularly, to obtain a non-invasive quasi-histological diagnosis for melanocytic lesions and to follow the efficiency of treatments. The results of this study indicate that most melanocytic nevi could be classified according to the reflectance confocal microscopy. Ringed patterns were correlated with junctional nevi, the dense or sparse large bright cells nests patterns with intra-dermal nevi. Our classification of melanocytic nevi should be considered hypothetically rather than conclusively.

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Conflicts of interest

None.

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