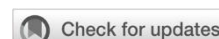


# Mixed type basal cell carcinoma: Clinical correlation of dermoscopy and histopathology

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## Abstract

**Background:** Basal cell carcinoma (BCC) is a skin cancer that arising from the basal layer of the epidermis. If left untreated, it may cause significant tissue destruction and morbidity. The gold standard for diagnosing BCC involves clinical examination, dermoscopy, and histopathology. Mixed type BCC poses challenges due to its aggressive behavior and higher recurrence risk.

**Case Illustration:** A 56-year-old Caucasian male presented with a gradually enlarging lump on his forehead over the past year. Clinical examination revealed a pigmented nodule (6.5 × 9 × 4 mm) on the temporalis dextra. Dermoscopy features including blue-gray ovoid nests, arborizing telangiectasias, and blue-gray globules were found. Complete excisional biopsy confirmed mixed-type BCC.

**Discussion:** Ultraviolet light exposure plays an important role in the development of BCC, in addition to genetic predisposition factors. The patient had Fitzpatrick skin type II with occupational sun exposure as a significant risk factor. Dermoscopy enhanced the preliminary diagnosis, revealing characteristic features including blue-gray ovoid nests, arborizing telangiectasias, and blue-gray globules, which correlated with histopathological findings. In this case, mixed type BCC (aggressive type) was confirmed through histopathological examination following complete excisional biopsy.

**Conclusion:** The accurate diagnosis of BCC requires integration of clinical examination, dermoscopy, and histopathology. Dermoscopy enables early detection while histopathology remains the gold standard for definitive diagnosis and risk stratification. In this case, mixed-type BCC poses challenges due to its aggressive behavior and higher recurrence risk, which requires complete excision.

**Keywords:** *dermoscopy, histopathology, mixed-type basal cell carcinoma*

## Abstrak

**Latar Belakang:** Karsinoma sel basal (KSB) merupakan kanker kulit yang berasal dari lapisan basal epidermis. Jika tidak ditangani, penyakit ini dapat menyebabkan destruksi jaringan yang bermakna dan meningkatkan morbiditas. Standar emas untuk diagnosis KSB meliputi pemeriksaan klinis, dermoskopi, dan histopatologi. KSB tipe campuran (*mixed-type*) memberikan tantangan tersendiri karena memiliki karakteristik yang lebih agresif dan risiko kekambuhan yang lebih tinggi.

**Ilustrasi Kasus:** Seorang laki-laki Kaukasia usia 56 tahun datang dengan keluhan benjolan pada dahi yang membesar secara perlahan selama satu tahun terakhir. Pemeriksaan klinis menunjukkan nodul berpigmen berukuran 6,5 × 9 × 4 mm pada regio temporalis dekstra. Pada pemeriksaan dermoskopi ditemukan gambaran berupa *blue-gray ovoid nests*, *arborizing telangiectasias*, dan *blue-gray globules*. Biopsi eksisional lengkap menegaskan diagnosis KSB tipe campuran.

**Diskusi:** Paparan sinar ultraviolet berperan penting dalam perkembangan KSB, selain faktor predisposisi genetik. Pasien memiliki tipe kulit Fitzpatrick II dengan paparan sinar matahari akibat pekerjaan sebagai faktor risiko yang bermakna. Dermoskopi membantu menegaskan diagnosis awal dengan menunjukkan gambaran khas berupa *blue-gray ovoid nests*, *arborizing telangiectasias*, dan *blue-gray globules*, yang berkorelasi dengan temuan histopatologi. Pada kasus ini, KSB tipe campuran dikonfirmasi melalui pemeriksaan histopatologi setelah dilakukan biopsi eksisional lengkap.

**Kesimpulan:** Diagnosis KSB yang akurat memerlukan integrasi pemeriksaan klinis, dermoskopi, dan histopatologi. Dermoskopi memungkinkan deteksi dini, sedangkan histopatologi tetap menjadi standar emas untuk diagnosis definitif dan stratifikasi risiko. Pada kasus ini, KSB tipe campuran memberikan tantangan karena perilakunya yang agresif dan risiko kekambuhan yang lebih tinggi, sehingga memerlukan eksisi yang lengkap.

**Kata kunci:** *dermoskopi, histopatologi, karsinoma sel basal tipe campuran*

## Introduction

Basal cell Carcinoma (BCC) is the most common type of skin cancer worldwide, accounting 80-90% of skin cancer.<sup>1</sup> BCC mostly occur on sun exposed area, predominantly on head and neck. It arises from the basal layer of the skin, with characteristic of slow growth, locally aggressive but rarely metastasize. The destructive effects of BCC often lead to morbidity if left untreated.<sup>2</sup>

The incidence of BCC is higher in Caucasian population. Prolonged Ultraviolet (UV) exposure is one of the predisposition factors that causing BCC. The earliest lesions of basal cell carcinoma are generally seen as a small papule or nodule, with variety size and can easily bleeds on minor trauma or friction. BCC clinically can be either pigmented or nonpigmented. Dermoscopy has been widely used for early detection of cancerous lesions. Dermoscopy able to visualize the skin condition that couldn't be seen with naked eye. However, histopathology remains the gold standard for definitive diagnosis.<sup>2,3</sup>

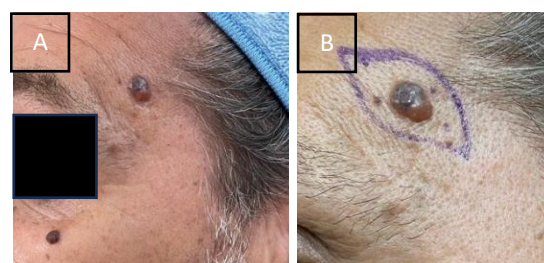
Clinicopathologically, BCC has several forms, including nodular, infiltrative, fibroepithelial, morpheaform and superficial. When more than one subtype is present in the same lesion, the BCC is classified as mixed.<sup>1,3</sup> Mixed type BCC may have aggressive behavior and potentially to have local recurrences. This study aims to assess the correlation between clinical findings, dermoscopy and histopathology to establish a definitive diagnosis and determine further treatment.

## Case Illustration

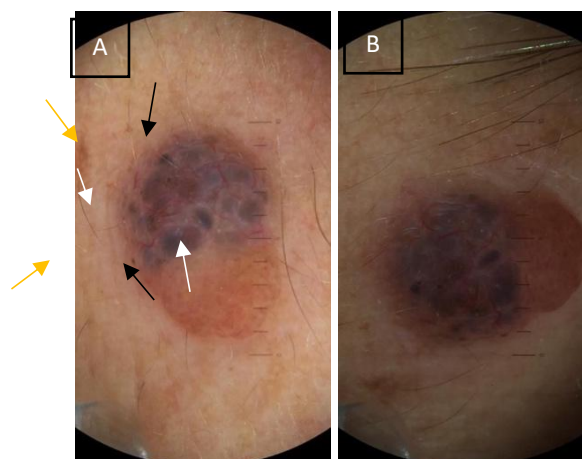
A Male, 56 years old, Caucasian, presented with a lump on his forehead for almost 1 year. It had begun with a small, pigmented lump, then it slowly enlarged. It was painless, but slightly itchy. No history of bleeding or previous skin cancer. Patient works as an architect, most of the time working outdoor. He rarely applies sunscreen during daytime.

A complete cutaneous examination was performed. A pigmented nodule with 2 color was found on the temporalis sinistra regio, with size 6,5mm x 9mm x 4mm, non-tenderness upon palpation. Dermoscopy examination found to be asymmetrical, with multiple large blue gray ovoid nests, multiple blue gray globules, multiple arborizing telangiectasias on erythematous background.

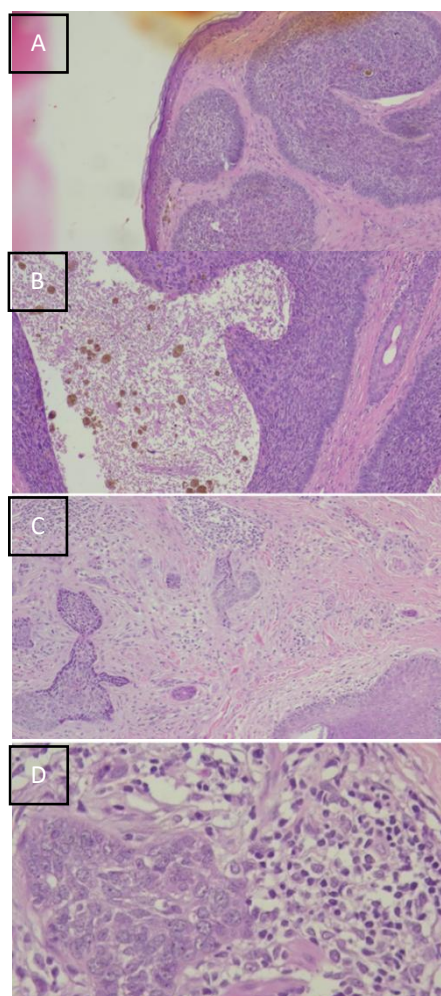
Diagnosis of pigmented nodular BCC suspected after clinical and dermoscopy examination. The lesion was completely excised for further histopathology examination. Microscopic evaluation of the tissue specimen showed several basaloid cell proliferations in lobular formation, varying shapes and sizes with focal necrosis and peripheral palisading. Narrow cleft and mucin-like material were found between the tumor lobules. Melanin pigment and melanin-laden macrophages were noted within the tumor nests connected to the basal epidermis. Ephelioid, lymphocytic and multinucleated giant cell were found on the dermis area, without mitotic activity. Correlation between clinical presentation, dermoscopy and pathology findings established the diagnosis of mixed type of BCC (nodular, pigmented, infiltrative and pleomorphic type).



**Figure 1.** (A) Clinical appearance of the skin lesions as an asymmetrical nodule with 2 color. (B) In closer view, and the elliptical excisional biopsy site was design.



**Figure 2.** (A) Dermoscopy appearance of the lesion in vertical view, length 9mm. Multiple large blue gray ovoid nest noticed (black arrow) with arborizing telangiectasias (white arrows) and multiple blue gray globules (yellow arrow). (B) dermoscopy appearance in horizontal view, width 6,5mm.



**Figure 3.** Histopathology finding of the patient (A) nodular type, (B) Pigmented type, (C) Infiltrative type, (D) Pleomorphic type.

## Discussion

BCC is the most common type of skin cancer. BCC originates from the basal layer of the epidermis, in the interfollicular or follicular bulges. It characterizes as a slow growing lesion, locally invasive with infrequent rate of metastasis. Many various factors have been describing as the predisposition factors of BCC such as genetic, chronic exposure to arsenic, photosensitizing drugs, or immunosuppression, however sun exposure (UV rays) particularly since childhood, is the main caused for the development of BCC. The severe and intermittent UV exposure during childhood is strongly linked to BCC. The UV exposure may cause DNA damage, mutagenesis and decrease immune surveillance.<sup>1,2,7</sup>

People who have type 1 and II Fitzpatrick skin type have a higher risk of developing BCC with a lifetime risk as 30%. People with red hair, light eye color and freckles are associated with higher risk of BCC. There are many clinical features of BCC. The most common form of BCC is nodular, start with a small lesion that is slowly growing. Unhealing ulcer may develop on the lesion, also called rodent ulcer. It is typically fragile and easy to bleed. This solid nodule may extent into subcutaneous tissue. The lesion may also pigment or pink-red color, macule or patch, scally.<sup>1,7</sup>

In this case, the patient is Caucasian with skin type II Fitzpatrick, who has no history of previous skin cancer, however the risk factor is prolonged UV light exposure without sun protection. The lesion started as a small, pigmented nodule that slowly enlarged and itchy. All these finding, support the diagnosis of BCC.

Dermoscopy has become an essential tool in dermatologic practice. It provides the skin imaging of the skin lesions, that can visualize microstructure of the skin that are not visible to naked eye. This noninvasive technique aids in the early detection of skin cancer.<sup>8</sup> Recent evidence suggests that dermoscopy is also useful in BCC management, providing information on the histological subtype, the presence of pigmentation or ulceration, as well as the response rate to non-ablative therapies.<sup>8,9</sup>

Dermoscopy diagnosis in BCC is based mainly in the presence of typical vascular structure, pigmented structure, ulceration and in the absence of pigmented network. BCC has a specific arborizing telangiectasias structure that characterized by bright red vessels, that branch irregularly into finer capillaries. They are sharply focused as they are located on the surface of the tumor Histologically, this finding corresponds to tumor neovascularization in the form of dilated vessels in the dermis. The most common pigmented structure observe in BCC is the large blue gray ovoid nest. Histologically, it is related to large tumor nest with pigment aggregates invading the dermis. Blue gray globules also give similar dermoscopy but smaller, round to oval structure, which correlates to small tumor nest in the papillary dermis and/or reticular dermis histologically. Blue-gray dots are seen as randomly distributed dots in sharp focus. Histologically, they correspond to small tumor aggregates at the dermo-epidermal junction or in the superficial dermis. Other pigmented structures such as maple leaf-like areas, spoke-wheel structures, and concentric structures all correspond to pigmented nests at the dermo-epidermal junction

and in the superficial papillary dermis. Ulceration under dermoscopy examination appears as orange and red structureless area, which corresponds to a total loss of epidermis and partial loss of dermis.<sup>4,6,8</sup> In our case, dermoscopy finding in this patient are blue gray ovoid nest, arborizing telangiectasias, and blue gray globules, which support the clinical diagnosis of BCC.

The histopathology subtypes of BCC are classified as low risk of recurrence (nodular, pigmented, superficial, infundibulocystic and fibroepithelial) and high risk of recurrence (micronodular, infiltrative, morphea and basosquamous). Some other rare variants of BCC including pleomorphic, signet, granular and clear cell BCC. Mixed types of BCC have been associated with tumor aggressiveness and high risk of recurrence. There is different treatment method of BCC, ranging from medical to surgical therapy. Complete surgical removal with histopathological confirmation is the first treatment of choice especially in mixed type BCC.<sup>3,7,9</sup> In our case, the histopathology findings were nodular, pigmented, infiltrative and pleomorphic. The patient underwent complete excisional removal and biopsy.

## Conclusions

To establish an accurate diagnosis of BCC, a comprehensive evaluation of clinical presentation, dermoscopic features, play an important role in guiding therapy, allowing clinicians to select the most effective treatment option with minimal side effect and optimal aesthetic outcome. A confirmation of histopathological examinations remains the gold standard for definitive diagnosis, and to reduce the

recurrence rate, particularly in high-risk case such as mixed type BCC.

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