

A Black Tumour on the Face with a Histological Rippled Pattern: A Quiz

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A man in his 40s was referred to our clinic for evaluation of a black mass on the left inner canthus, which had gradually enlarged over the past 4 months (Fig. 1). The tumour was excised with a 2-mm surgical margin. Histologically, cells with densely stained, oval nuclei were observed proliferating in a solid, nest-like, and small cluster pattern, extending from the epidermis to the deep dermis (Fig. 2A). At the periphery of the nests, palisading of tumour cells was observed, with clefts visible between the nests and the surrounding stroma (Fig. 2B). In some areas of the tumour tissue, the nuclei of the tumour cells were arranged in linear patterns, alternating with nuclear-free zones, creating a characteristic rippled appearance (Fig. 2C). Alcian blue staining demonstrated mucin deposition in the clefts surrounding the tumour nests (Fig. 2D). Masson's trichrome staining was negative in the rippled pattern areas, suggesting that the nuclear-free zones lacked collagen fibres (Fig. 2E). Immunohistochemical staining demonstrated positivity for AE1/AE3, Ber-EP4 (Fig. 2F), and CK19 in the tumour cells, as well as being focally positive for androgen receptor (Fig. 2G), while CK20, synaptophysin, neurofilament, adipophilin, EMA, and CEA were negative.

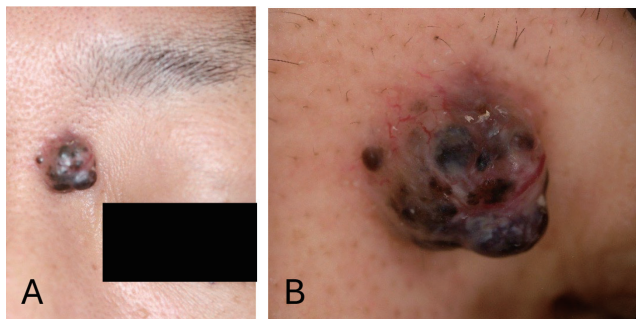


Fig. 1. Clinical and dermoscopic findings of the case. (A) A black nodule measuring 13 mm in diameter was seen on the left inner canthus. (B) Dermoscopic findings of the tumour. The tumour displayed a relatively well-defined border with the surrounding tissue, along with arborizing vessels, multiple blue-grey globules, and shiny white areas.

What is your diagnosis?

- 1: Basal cell carcinoma (BCC) coexisting with sebaceoma
 - 2: BCC coexisting with sebaceous carcinoma
 - 3: BCC coexisting with trichoblastic carcinoma
 - 4: BCC partially presenting with rippled pattern
- See next page for answer.

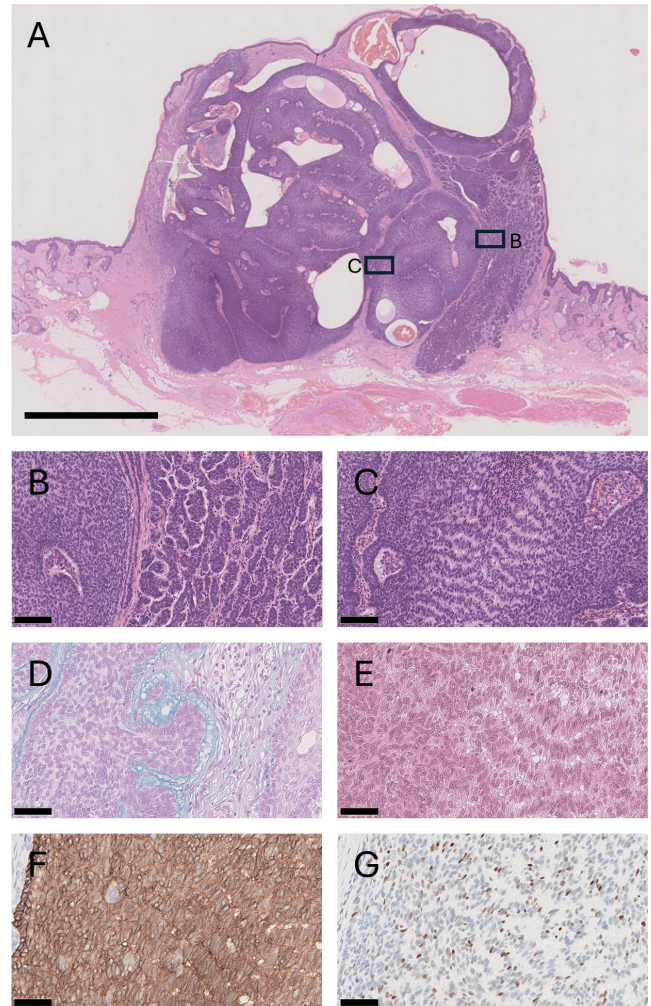


Fig. 2. Histopathological findings of the tumour. (A) Low-power field of the tumour (haematoxylin and eosin staining: HE). (B, C) High-power views of the boxed area in (A). (HE). Histochemical images of (D) Alcian blue staining and (E) Masson's trichrome staining. Immunostaining images of (F) Ber-EP4 and (G) androgen receptor. Figs (E), (F), and (G) correspond to regions closely matching Fig. (C), highlighting similar regions within the tumour. Scale bar: 2.5 mm for (A), 100 µm for (B) and (C), and 50 µm for (D – G), respectively.

ANSWERS TO QUIZ

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Diagnosis: Basal cell carcinoma partially exhibiting a rippled pattern

The rippled pattern is a distinct architectural feature observed in various skin tumours, characterized by orderly cellular and stromal arrangements. Its presence has been documented in both benign and malignant lesions, including sebaceoma (1), trichoblastoma (2), sebaceous carcinoma (3), trichoblastic carcinoma (4), and basal cell carcinoma (BCC) (5). Although the exact prevalence remains unknown, this pattern is most commonly identified in sebaceous and adnexal tumours and is exceedingly rare in BCC and other skin neoplasms. In fact, rippled-pattern BCC accounts for less than 1% of all cutaneous tumours exhibiting a rippled pattern.

BCC can rarely coexist with sebaceous carcinoma (6) or trichoblastic carcinoma (7). Such collision tumours, particularly those involving BCC and sebaceous carcinoma within a single lesion, underscore the importance of histological confirmation and close monitoring, given the metastatic potential of sebaceous carcinoma. Several reports describe BCC with sebaceous differentiation, which necessitates meticulous discrimination from sebaceous carcinoma to avoid misdiagnosis (8). Moreover, sebaceous carcinoma with apocrine differentiation has been reported in patients previously diagnosed with BCC (9). Sebaceous carcinoma itself is an aggressive cutaneous malignancy, carrying a higher risk of systemic spread than BCC, and thus mandates prompt interventions such as sentinel lymph node biopsy and imaging-based staging. Similarly, trichoblastic carcinoma, though relatively uncommon, can also demonstrate aggressive behaviour, highlighting the need for precise histological evaluation. Because treatment strategies for these malignancies differ significantly from those for BCC, misdiagnosis poses a substantial risk and necessitates detailed histological and immunohistochemical evaluation to ensure accurate diagnosis.

In the present case, immunohistochemical studies supported the diagnosis of BCC with positivity for Ber-EP4, and CK19 was consistent with BCC, whereas negative staining for EMA, CK20, and adipophilin excluded sebaceous carcinoma. The possibility of trichoblastic carcinoma was ruled out based on the absence of active mitosis or necrosis, and androgen receptor positivity further reinforced the di-

agnosis (10). Histochemical analysis demonstrating mucin deposition around the tumour nests and a lack of collagen in the nuclear-free zones confirmed the rippled-pattern BCC. Recognizing rare subtypes like rippled-pattern BCC is critical to ensure accurate diagnosis, avoid unnecessary over-treatment, and appropriately assess tumour aggressiveness.

This case exemplifies the significance of thorough histopathological and immunohistochemical evaluations in differentiating histologically similar cutaneous tumours, thereby allowing for appropriate treatment selection and improved patient outcomes. While the rarity of rippled-pattern BCC makes its recognition challenging, careful postoperative monitoring remains essential to detect any possible recurrence or progression. The patient has remained free of recurrence for 1 year and 2 months postoperatively.

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