

**Deep penetrating naevus: case report**  
A clinical and histological mimic of malignant melanoma

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**ABSTRACT**  
Malignant melanoma (MM) is the most serious form of skin cancer, responsible for approximately 80% of skin cancer deaths. Over the last 25 years the reported incidence of MM has increased, as a result of climate change (Fig 1). Changes including ozone depletion, increased UV exposure, increased greenhouse gases and altered human behaviour, are all contributing to the increased rates of skin cancer. There are, however, some entities that show overlapping clinical and histological resemblance to MM but exhibit low grade behaviour. We present one such case – *deep penetrating naevus (DPN)* – with the purpose of raising awareness of these important mimics and preventing overdiagnosis of malignant melanoma.

**Case report:**

**Clinical Presentation**

A 60-year-old female with a sudden onset dark blue/black nodule on left ear.

**Macroscopic features:**

Piece of skin 15x8x6mm, with a 6mm black papule.

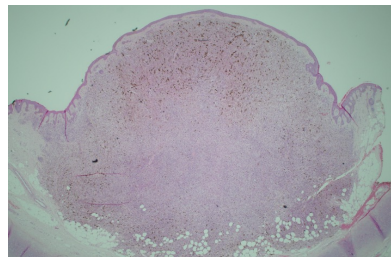
**Microscopic features:**

Polypoid, relatively symmetrical, intradermal & subcutaneous non-ulcerated melanocytic proliferation. Cells were naevus-like, round or elongated, variably pigmented with pale cytoplasm, vesicular nuclei and single small nucleolus. Occasional mitoses (<1 per square mm). Focal perineural invasion. No lymphovascular permeation.

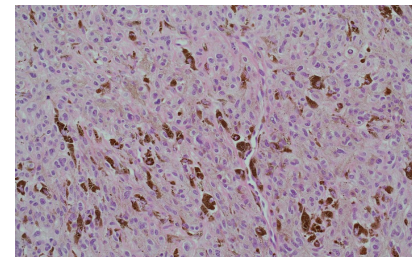
**Immunohistochemistry:**

Our case had the following immunoprofile:

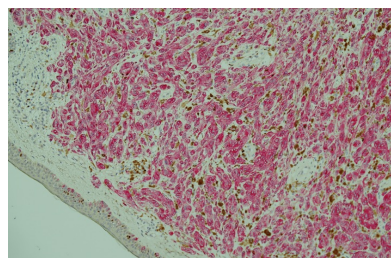
- S100 and MelanA diffusely positive
- PRAME negative
- Beta catenin diffusely positive, nuclear staining
- p16 focally positive
- Ki67 proliferation index was low



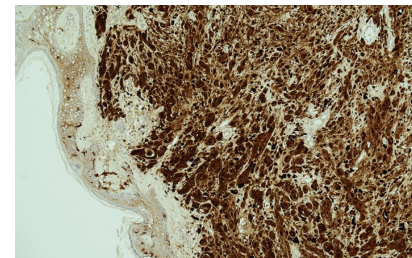
H&E (2x)



H&E (20x)



Melan A (red stain), Ki67 (brown stain) (10x)



S100 (10x)

**Features of DPN that mimic MM:**

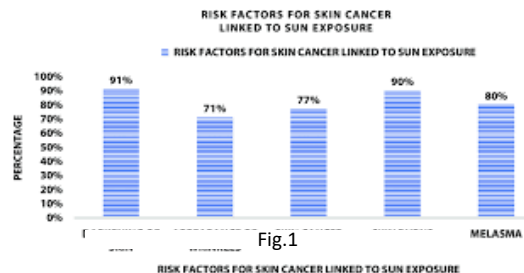
- Lack of maturation with depth
- Deep extension into subcutis, encircling blood vessels and adnexal structures
- Occasional dermal mitoses
- Cytonuclear atypia, typically mild
- Focal Pagetoid spread has been described, but is rare and should prompt careful examination for other features of MM

**Features favouring DPN:**

- Symmetrical wedge-shaped outline
- Epithelioid or spindled nuclei, low grade atypia
- Mitoses normal in appearance
- Typical IHC profile including negative staining for PRAME (*Preferentially expressed antigen in melanoma*)

**Deep penetrating naevus**

- Solitary melanocytic neoplasms (2-10mm) usually on face, upper trunk or proximal limbs
- Unknown aetiology
- Adults, mean age 30y
- Well demarcated, wedge-shaped lesion in dermis and subcutis
- Epithelioid and/spindle cells, low grade cytological atypia, occasional mitoses
- Uncommonly recur following excision, rarely metastasise



**References**

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- Atif, H. 2021 "A Cross-Sectional survey of knowledge of skin cancer in Saudi Arabia" *Dermatol Prac & Concep* 11(3):e2021076
- Cosgarea I et al 2020 "Deep penetrating nevus and borderline deep penetrating nevus: A literature review". *Front Oncol* 10 3389
- Bharath A and Turner R 2009 "Impact of climate change on skin cancer". *J Royal Soc Med* 102 (6): 215-218

**Discussion**  
Climate change is contributing to increased incidence of skin cancer, including the most serious form malignant melanoma. There are however some entities that mimic MM but have low grade behaviour. We present a case report of one such entity – *deep penetrating naevus* – highlighting morphological and immunohistochemical features that can aid in diagnosing this lesion. Recognition of these entities is essential for correct patient management and prevention of overdiagnosis of malignant melanoma.