The role of LC-OCT and RCM in the diagnosis of a malignant eccrine differentiated sweat gland tumor with features of a porocarcinoma & an eccrine spiradenocarcinoma: a case report

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Introduction

Malignant eccrine sweat gland tumors are rare, aggressive neoplasms. This group includes tumors with mixed features like porocarcinoma, originating from eccrine ducts, and eccrine spiradenocarcinoma, arising from spiradenomas. The combination of these two entities in a single tumor poses significant diagnostic and therapeutic challenges due to their aggressive nature and potential for metastasis.

Objectives

The aim is to report the application of line-field confocal optical coherence tomography (LC-OCT), optical coherence tomography (OCT) and ex-vivo reflactance confocal microscopy (RCM) for diagnosis of the features of a malignant eccrine differentiated sweat gland tumor and its margin assessment.

Methodology

An 84-year-old man presented with a 10 x 14 mm whitish-reddish, ulcerated nodule on the scalp. Dermoscopy, OCT, in-vivo and ex-vivo LC-OCT and ex-vivo RCM imaging suggested an epithelial tumor. Mohs surgery using in-vivo, ex-vivo LC-OCT and ex-vivo RCM was scheduled, followed by histopathological examination of the specimen.

Results and conclusion

Dermoscopy showed polymorphous vessels on a whitish background, two blue, pigmented clods at the periphery and central ulcerations resembling a basal cell carcinoma. Oval pink-white structureless areas and white-to-pink halos were also noted. In-vivo LC-OCT revealed large nodules surrounded by a single-layered bright band, with cuboidal cells and whitish halos. OCT showed a dark nodule with thick bright strands and central necrosis. Ex-vivo LC-OCT and RCM confirmed complete tumor exicison, validated by histology. Histology revealed a malignant tumor with two components: 1) epitheloid cell clusters mimicking glandular lumina and 2) proliferations of polymorphic epitheloid cells bordered by a single-layered epithelium with palisading, pleomorphism, mitoses and necrosis. The diagnosis was a 3.4 mm malignant eccrine sweat gland tumor with porocarcinoma and eccrine spiradenocarcinoma features. This case highlights the use of LC-OCT, OCT, and ex-vivo RCM for rapid, quasi-histological evaluation, aiding in ruling out benign lesions and other skin cancers. Further research is needed to confirm these findings.
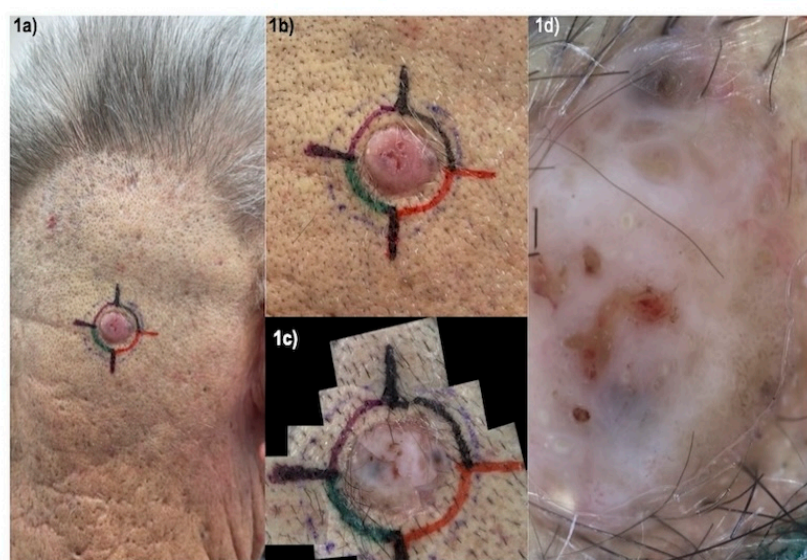

Fig. 1. Clinical images (1a, 1b) and dermoscopic images (1c, 1d) of the 10 x 14 mm whitish-reddish, ulcerated nodule on the scalp of an 84-year-old man. Dermoscopy showed polymorphous vessels on a whitish background, two blue, pigmented clods at the periphery and central ulcerations. Oval pink-white structureless areas and white-to-pink halos were also seen.
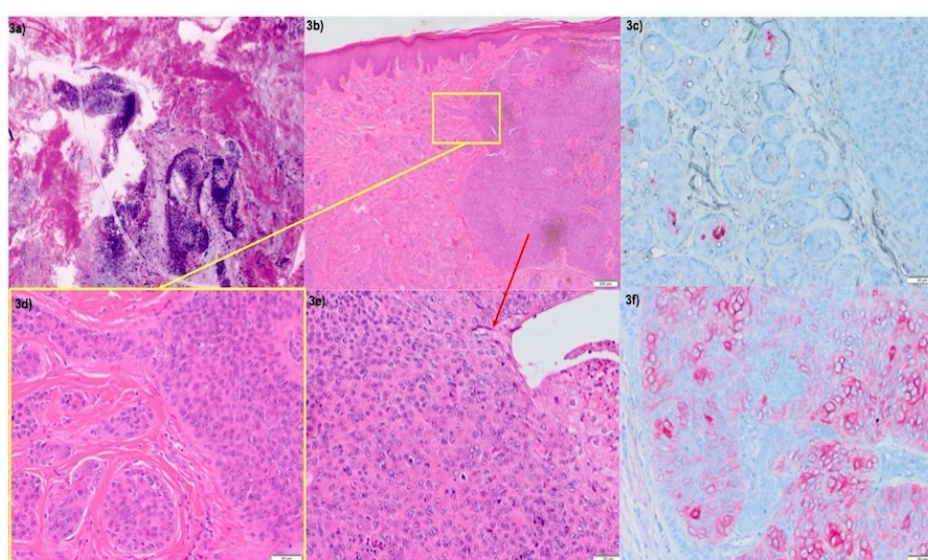

Fig. 3. Ex-vivo RCM and histology of a 3.4 mm malignant eccrine sweat gland tumor with porocarcinoma and spiradenocarcinoma features. Ex-vivo RCM showed a sweat gland at the margin (3a). Histology revealed (3b, d, e): epitheloid cell clusters mimicking glandular lumina, proliferations of polymorphic epitheloid cells with palisading, pleomorphism, mitoses and necrosis. EMA was positive (3f), CEA only luminal (3c).
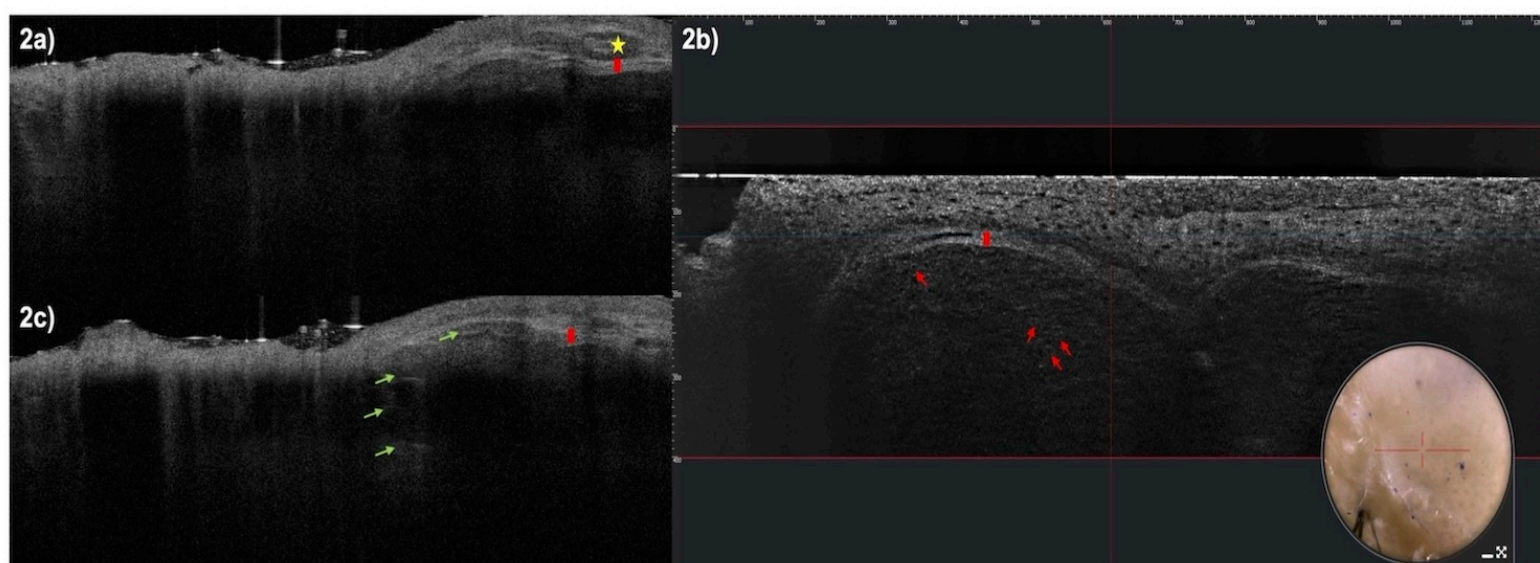

Fig. 2. OCT (2a, 2c) and LC-OCT (2b) of the same lesion. OCT showed a large dark nodule surrounded by thick bright strands (red line), necrosis (yellow asterisk), consisting of smaller nodules, also separated by thick bright strands (green arrows). In-vivo LC-OCT showed large nodules with a single-layered bright band (red line) and cuboidal cells with whitish halos (red arrows).