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# Epidermotropic cutaneous metastases of squamous cell carcinoma from primary esophageal cancer: report of a case and review of the literature

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## Abstract

Metastatic squamous cell carcinoma (SCC) to the skin can be distinguished histologically from primary cutaneous squamous cell carcinoma as, unlike the latter, it is typically separated from the normal overlying squamous epithelium. Rare cases have been reported of cutaneous metastases of SCC that demonstrate continuity with the overlying benign squamous epithelium, termed "epidermo-tropic cutaneous metastases of SCC." We report the first case of epidermotropic cutaneous metastases of SCC originating from primary esophageal SCC with a review of the literature on this rare histological phenomenon.

*Keywords: epidermotropic, metastatic, cutaneous squamous cell carcinoma, esophageal cancer*

## Introduction

Cutaneous metastases from internal malignancies are rare, with a frequency ranging between 0.7-10% [1]. Cutaneous metastases of squamous cell carcinoma (cmSCC) are classically distinguished histologically from primary cutaneous squamous cell carcinoma (pcSCC) by the separation of the tumor from normal overlying squamous epithelium in the former [2]. There are, however, a limited number of cases reported in the literature of cmSCC demonstrating continuity with the overlying benign squamous epithelium, termed "epidermotropic cutaneous metastases of SCC," which challenge this

criterion [2-6]. We report the first case of epidermotropic cmSCC originating from primary esophageal SCC.

## Case Synopsis

A 53-year-old man presented to the multidisciplinary cutaneous oncology clinic with a 4 week history of three rapidly enlarging, painful nodules on the scalp. Five months prior, he was diagnosed with stage IV metastatic esophageal SCC, with metastases to the liver, stomach, and thoracic lymph nodes. He had undergone treatment with radiation (50.2 Gy) and chemotherapy with cisplatin and 5-fluorouracil. His medical history was significant for chronic gastric esophageal reflux, excess alcohol intake, and heavy smoking. Physical examination at presentation revealed three firm, skin-colored nodules on the mid-crown, left crown, and right parietal scalp (**Figure 1**).

A skin biopsy from the left-crown nodule exhibited cords of atypical cells interstitially arranged between thickened collagen bundles attached to the epidermis with extension into the subcutis, suggestive of pcSCC (**Figure 2**). However, a PET/CT scan demonstrated 3 enhancing soft tissue lesions on the scalp without involvement of the underlying calvaria, suggestive of new cutaneous metastases. Additionally, there were multiple new liver, gastric, pulmonary, and osseous metastases. The patient was commenced on palliative radiation therapy to the scalp based on the assumption that the scalp nodules were cmSCC, with subsequent resolution of



**Figure 1.** Clinical photo of patient at initial presentation. 3 well-defined skin-colored nodules on crown and right parietal scalp.

the painful scalp nodules 14 days post-radiation. Despite a lack of skin recurrence at 4 months follow-up, the patient entered hospice care and died soon after secondary to his widespread metastases.

## Case Discussion

Cutaneous metastases from internal malignancies are rare, with cmSCC accounting for approximately 11-15% [1, 2]. Cases of cmSCCs arise most commonly from primary lung, oral cavity, or esophageal cancers, and less frequently from uterine, cervix, penis, or distant skin [3]. Histologically, cmSCC to the skin are usually differentiated from pcSCC by the presence of atypical cells within the dermis and subcutaneous fat without attachment to the overlying squamous epithelium [3]. In contrast, pcSCC classically demonstrates continuity between the malignant and adjacent benign surface squamous epithelium. This case report highlights an exception to the rule. Though the focal continuity of atypical cells with the epidermis initially suggested pcSCC pathologically, the recent diagnosis of metastatic esophageal SCC, together with the

presentation of multiple synchronous skin nodules was more compatible with a diagnosis of epidermotropic cmSCC.

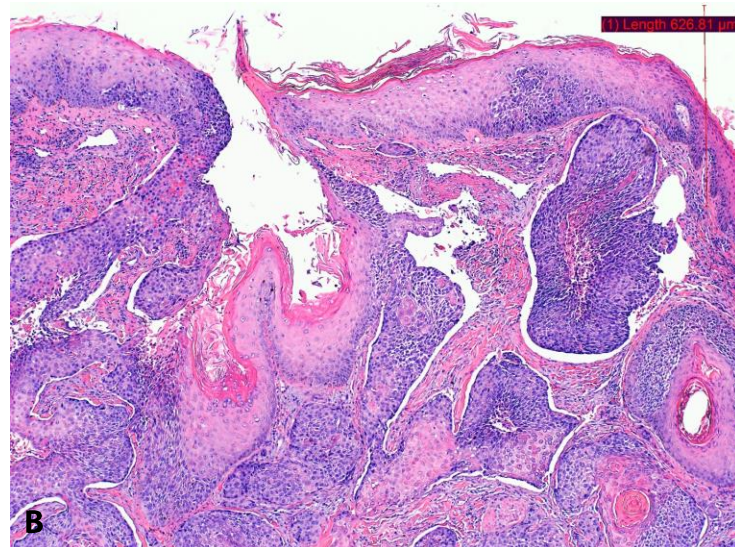
Only a handful of cases of epidermotropic cmSCC mimicking pcSCC have been reported. The first reported case in 1984 was a patient with primary cervical carcinoma status post total abdominal hysterectomy with bilateral salpingo-oophorectomy and chemoradiation, who subsequently developed lymph node metastases and multiple erythematous abdominal cutaneous nodules [4]. Histology showed poorly differentiated SCC with focal extension into the epidermis. In some areas the neoplastic cells focally extended into the epidermis in a pagetoid fashion, mimicking pcSCC [4]. Of note, serial sections also revealed plugs of tumor in superficial vascular channels [4]. The authors concluded that the clinical history of multiple, rapidly developing nodules and the vascular involvement was consistent with cmSCC [4]. Another two cases of epidermotropic cmSCC were reported in 1985 originating from primary SCCs of the lower lip and dorsal hand respectively, both of which developed distant cutaneous nodules. Biopsies from both cases demonstrated multiple foci of malignant squamous epithelium extending into the overlying normal epidermis [3]. Subsequent reports of epidermotropic cmSCC have been associated with primary vaginal/vulvar SCC demonstrating intraepidermal pagetoid spread of neoplastic cells [4, 5], primary penile SCC demonstrating foci of smooth transition between the metastatic tumor and overlying epithelium without pagetoid spread and with occasional tumor cells in dermal lymphatics [6], as well as a primary hypopharyngeal carcinoma [7].

## Conclusion

In conclusion, pcSCC and the much rarer epidermotropic cmSCC can appear identical under the microscope by demonstrating a smooth transition between malignant cells and the overlying normal epidermis. Though evidence of malignant cells in the blood [4] and/or lymphatic vessels [6] may suggest metastatic disease, this can also be found in invasive pcSCC. Clinical clues, in particular the



A



B

**Figure 2.** H&E of biopsy. Cords of atypical cells interstitially arranged between thickened collagen bundles with attachment to the epidermis and extension into the subcutis. **A)** Low power. **B)** Higher power (scale bar in the margin).

synchronous or simultaneous appearance of multiple cutaneous nodules, is crucial in the diagnosis of metastatic disease and should be provided to the dermatopathologist by the clinician to help make the diagnosis. Confirming the diagnosis is essential as the presence of cmSCC is typically a poor prognostic sign[2]. Awareness of this

rare phenomenon in cutaneous metastases of SCC, together with a high suspicion in the relevant clinical setting is key in clinching the diagnosis. Our case is the first report of primary esophageal SCC with multiple epidermotropic cutaneous metastases to the scalp, to our knowledge.

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