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Cutaneous metastasis to the scalp as the primary presentation of colorectal adenocarcinoma

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Abstract

Eruptaneous metastasis is an uncommon presentation of colorectal adenocarcinoma that can occur years after diagnosis of the primary cancer or manifest as the first sign of malignancy. It is essential to diagnose these metastases immediately, as this late-stage development carries a poor prognosis. The scalp is one of the less common sites for skin metastases and nodules may be mistaken for benign entities. In this case report, we report on the case of a 61-year-old woman with CREST syndrome who presented with a cutaneous metastasis to the scalp as the first sign of colorectal adenocarcinoma.

Keywords: metastasis, skin, colorectal adenocarcinoma, scalp, cyst

Introduction

Cutaneous metastases are relatively uncommon, occurring in approximately 0.7-5.3% of cancer patients, and are an important indicator of recurrence of previously treated cancers. Less commonly, they may be the first sign of internal malignancy [1, 2]. Colorectal carcinoma is the third most common cancer in the United States and accounts for the primary malignancy in approximately 4% of cutaneous metastases [2, 3]. Metastases to the skin are most often found on the chest and abdomen and are least likely to appear on the face and scalp [1]. Prompt diagnosis of cutaneous metastases can be difficult, as they may clinically appear benign. However, it is essential to maintain an index of

suspicion for these metastases owing to the clear implications for treatment and prognosis. In this case report, we present a patient for whom a cutaneous metastasis to the scalp was the presenting sign of colorectal adenocarcinoma.

Case Synopsis

A 61-year-old woman with CREST (calcinosis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly, and telangiectasia) syndrome presented to the clinic for excision of a single non-erythematous nodule without a central punctum on her scalp thought to be a pilar cyst (**Figure 1**). The 1.5 x 1.5 cm lesion was excised in toto down to adipose tissue, with a final defect size of 2 x 2 cm. Pathologic examination revealed skin and subcutaneous tissue with atypical glands infiltrating both the dermis and subcutis. The glands demonstrated irregular branching, cribriforming, angulated borders,



Figure 1. The patient presented to clinic with a skin-colored, smooth nodule on her scalp.

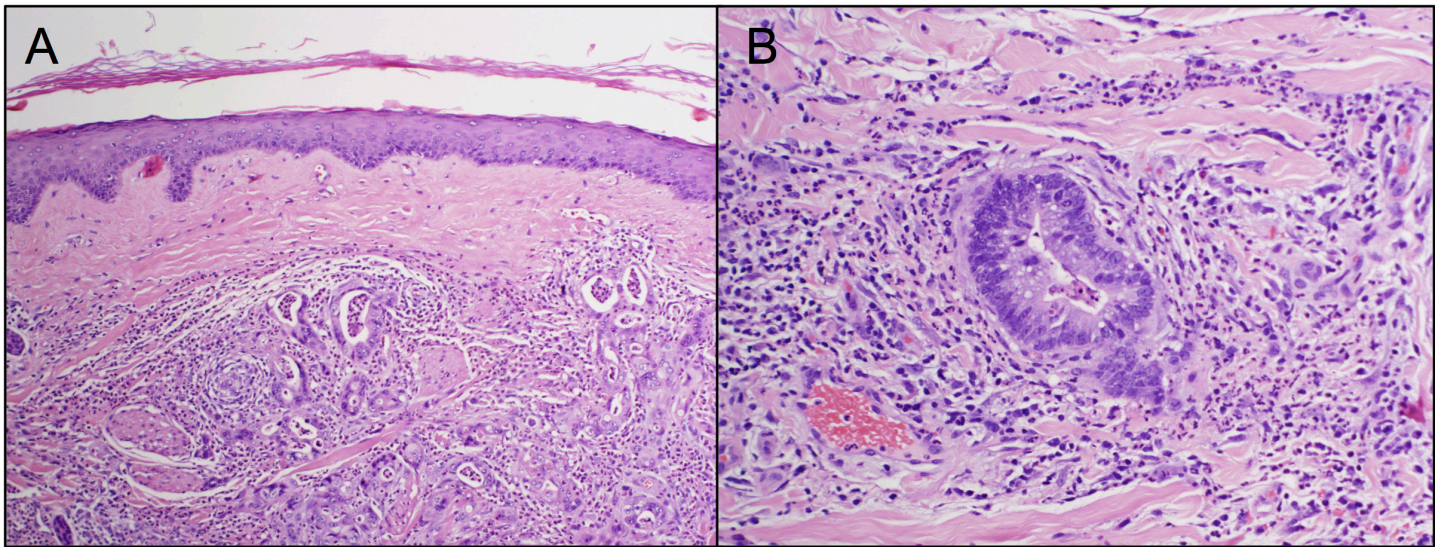


Figure 2. Biopsy shows skin with A) multiple glands in the dermis displaying irregular branching and cribriforming (H&E, 100%), and B) a gland in the dermis with intraluminal necrotic debris and dense periglandular neutrophilic inflammatory infiltrate (H&E, 200%).

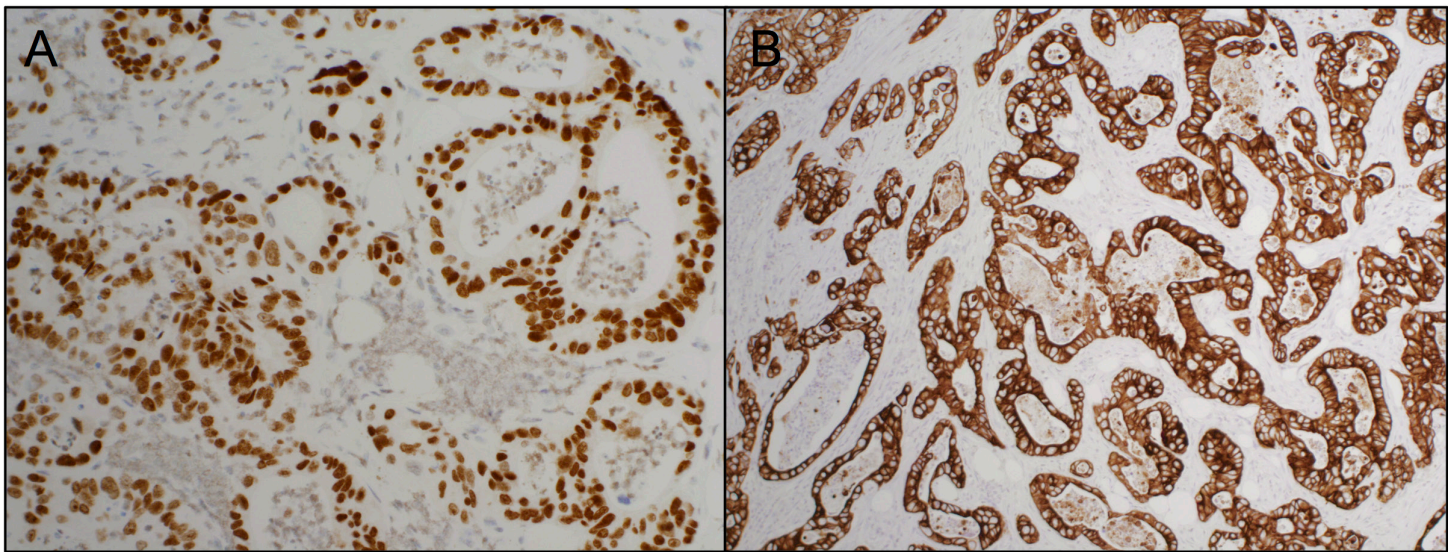


Figure 3. A) CDX2 immunohistochemical staining demonstrated strong and diffuse nuclear staining of the glandular proliferation (400%). B) CK20 immunohistochemical staining demonstrated strong and diffuse cytoplasmic staining of the glandular proliferation (200%).

marked pleomorphism, and intraluminal necrotic and inflammatory debris (**Figure 2**). The specimen demonstrated strong and diffuse positivity for both CDX2 (**Figure 3A**) and CK20 (**Figure 3B**), indicating metastatic adenocarcinoma likely from a colorectal origin. The patient had a colonoscopy 8 years prior that showed no evidence of abnormalities and she had no history of cancer. Follow up colonoscopy performed after pathologic diagnosis of the above scalp lesion revealed a 25 mm Ila + IIc (superficial elevation with central depression) polyp in the left

descending colon and a 14 mm sessile polyp in the rectum. Pathologic evaluation revealed tubular adenoma in both resected polyps.

Workup for additional metastases was performed by positron emission tomography (PET)/computed tomography (CT) and magnetic resonance imaging (MRI) imaging due to reports of migraines, blurry vision, persistent cough, and dyspnea on exertion. MRI of the brain with and without contrast revealed no evidence of metastatic disease. CT of the

chest with contrast noted the presence of hilar adenopathy and pulmonary nodules, which were diagnosed as metastatic colorectal adenocarcinoma upon biopsy. The patient is currently undergoing chemotherapy and will undergo resection of colonic and rectal polyps via endoscopic mucosal resection, with the possibility of later surgery based on the histopathological results of the biopsies.

Case Discussion

The clinical presentation of cutaneous metastases of visceral malignancy is highly variable, often appearing as single or multiple firm, smooth, dome-shaped papules or nodules. Skin involvement of colorectal cancer is usually found in the abdominal area, most often in the periumbilical region, although distant metastases are possible [4]. In some cases, diagnosis of a cutaneous metastasis can precede discovery of the primary malignancy [2, 4]. Because these lesions often exhibit histologic characteristics similar to the underlying malignancy, histopathologic examination along with immunohistochemistry can suggest the location of an unknown primary tumor. In this case, the glandular formations seen on hematoxylin and eosin sections combined with strong and diffuse positivity for CK20 and CDX2 indicated a colorectal origin or a probable primary of colorectal origin [5].

The scalp is a less common site for cutaneous metastases, accounting for 6.9% of all skin metastases [1]. Several mechanisms for the development of cutaneous metastasis have been suggested, including direct extension, hematogenous spread, lymphatic spread, and direct inoculation of tumor cells. Hematogenous and lymphatic spread likely represent true metastatic disease; the scalp may be a destination site for metastases owing to its high vascularity. A recent study of dermoscopic findings in cutaneous metastases indicates that hypervascularity is a feature of most cutaneous metastases (88%), suggesting the importance of angiogenesis and a vascular network in the pathogenesis of these lesions [6]. There are reports in the literature of metastatic cancers arising in previous surgical incision sites and biopsy sites distant from the primary tumor [7]. Although the exact pathogenesis of metastases arising in scar tissue has yet to be elucidated, it is postulated that disruption in the microvasculature and lymphatics in the surrounding area lowers the

barrier for circulating tumor cells to enter into and proliferate within the interstitial cellular environment.

The patient presented here has CREST syndrome. Patients with systemic scleroderma face an increased risk of certain types of cancer compared to the general population and there is some data in the literature to support a mechanistic link between a paraneoplastic syndrome and scleroderma [8]. A small 23-patient study by Shah et al. revealed a temporal relationship between onset of scleroderma and cancer in a subset of scleroderma patients with antibodies to RNA polymerase I/III [9]. The authors hypothesize the mechanism underlying this finding relates to anti-tumor immunity that becomes directed against host tissues, inducing a rheumatic phenotype [9]. The relationship between malignancy and autoimmunity has been examined in the past for other autoimmune disorders, such as dermatomyositis and systemic lupus erythematosus [10]. Although a causal relationship has not been established between autoimmunity and malignancy, these studies indicate a need to maintain an awareness of the increased risk for malignancy in these patients.

Conclusion

The prognosis following diagnosis of a cutaneous metastasis is overall poor, as it is generally a late-developing occurrence. Several studies indicate varying survival times based on the location of the primary sites, but survival time is usually less than 12 months [2]. The reported case demonstrates the need to maintain an index of suspicion for cutaneous metastasis, especially in older patients with autoimmune disease. It also demonstrates the importance of histologic evaluation of resected lesions.

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