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CASE REPORT | COLON

Cellular Angiofibroma Presenting as a Subepithelial Rectal Mass

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ABSTRACT

A very rare case of cellular angiofibroma arising from the rectum in a 62-year-old man with a normal colonoscopy 2 years earlier is reported. To our knowledge, this is the first such case reported in the literature. The tumor was transanally excised with clear margins, and the patient had no postoperative complications. It is key to accurately differentiate this lesion from other subepithelial rectal tumors and more aggressive genital soft tissue tumors because clinical management varies. We performed a review of clinical records and pathology as well as an extensive literature review.

INTRODUCTION

Cellular angiofibroma (CAF) was first described in 1997 as a distinctive mesenchymal neoplasm composed of 2 principal components: spindle cells and prominent vasculature.[1] Initially thought to be a tumor of the vulva of middle-aged women, histologically

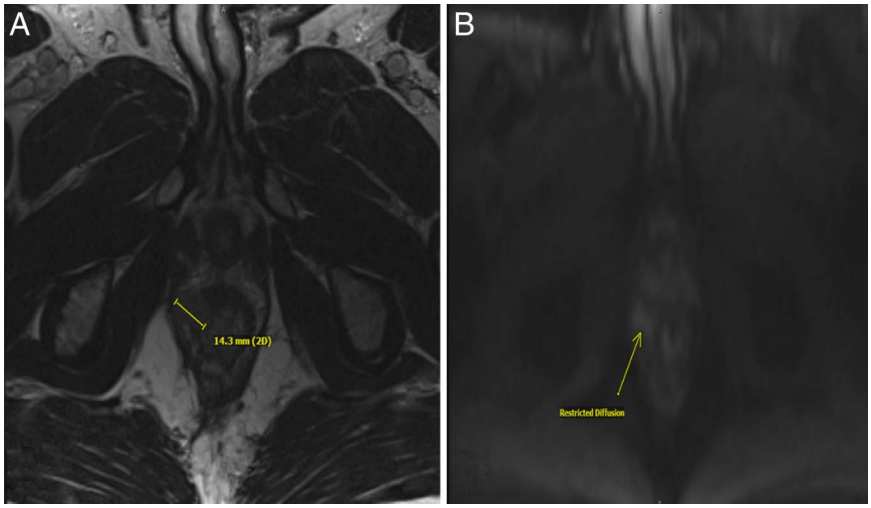

Figure 1. MRI of the pelvis-prostate with incidental low rectal mass. (A) MRI T2 rectal mass without gadolinium contrast-low rectal submucosal exophytic lesion abutting the external sphincter fibers and posterior aspect of the prostate. (B) MRI DWI—There is loss of outer muscularis layer and diffusion restriction, findings which make it suspicious for neoplasm. DWI, diffusion weighted imaging; MRI, magnetic resonance imaging.

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identical lesions were found in the inguinal regions of adult men and the trunk, oral mucosa, knee, and upper eyelid.[2,3] To date, no description of colorectal CAF has been reported. CAF poses a diagnostic challenge because its pathological features overlap with other mesenchymal tumors. In addition, extragenital CAF may be misdiagnosed during tumor workup in anatomical locations where other pathologies are more common. The pathologic diagnosis of CAF has evolved to include the presence or absence of various immunostains. Immunohistochemistry helps to differentiate CAF from other mesenchymal tumors that may be more aggressive. We present a patient with a submucosal low rectal mass, which is the first reported case of rectal CAF in the literature.

CASE REPORT

A 62-year-old man with hypertension, chronic kidney disease, and prostate cancer (Gleason 6) presented with a 14.3 mm submucosal rectal mass seen on surveillance magnetic resonance imaging (MRI) for his prostate (Figure 1). His last screening colonoscopy 2 years earlier was normal. The patient denied any mucous/blood per rectum, changes in bowel movements, or abdominal/rectal pain. On referral to gastroenterology, a flexible sigmoidoscopy was unrevealing; however, an endoscopic ultrasound (EUS) identified a 9.8 × 10.9 mm submucosal hypoechoic mass contiguous with the external sphincter. Owing to the location, a fine needle aspiration was not feasible, and the patient was referred to a colorectal surgeon. The patient underwent a transanal excision of the mass with no complications.

Final pathology revealed a rectal CAF with R0 resection. Macroscopically, the tumor formed a well-circumscribed, 2-cm nodule involving the rectal submucosa and muscularis propria. The tumor was composed of spindle cells arranged in fascicles with intervening vessels and wispy collagen fibers (Figure 2). The tumor was positive for membrane protein CD34, estrogen receptor (ER), and androgen receptor. The tumor was negative for a panel of antibody stains including S100 protein, desmin, progesterone receptor, p16, α-smooth muscle actin (α-SMA), and Dog1 (discovered on gastrointestinal stromal tumor [GIST]). No

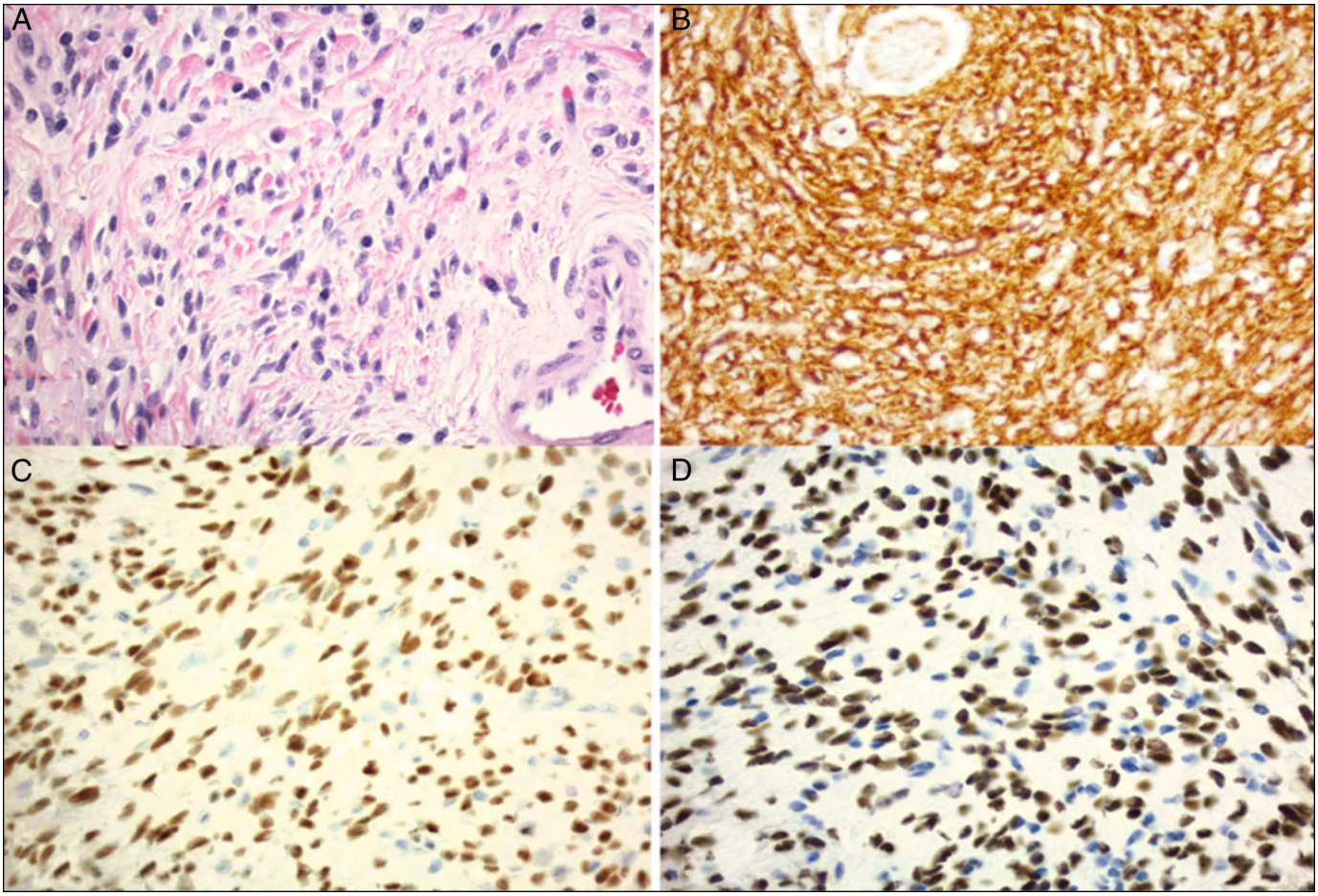

Figure 2. Histopathology of rectal cellular angiofibroma. (A) The tumor is composed of uniform, bland, spindle cells accompanied by thick-walled vessels (hematoxylin and eosin, original magnification 400×); (B) The tumor cells are positive for CD34 (3,3′-Diaminobenzidine as chromogen, original magnification 400×); (C) The tumor cells are positive for ER (3,3′-diaminobenzidine as chromogen, original magnification 400×); (D) The tumor cells are positive for AR (3,3′-diaminobenzidine as chromogen, original magnification 400×). AR, androgen receptor; ER, estrogen receptor.

Table 1. Differential diagnosis of cellular angiofibroma with histological and immunohistochemical profiles[a]

Differential diagnosis of CAF	Histological features	Vimentin	CD34	SMA		ER/PR	Other
CAF	Well-circumscribed, spindle cells, thick wall blood vessels. hvalinization	+	+	+/−	−	+/−	
Aggressive angiomyxoma	Poorly circumscribed, infiltrative borders	+	+	+	+	+/−	
Anoi.omvofibrohl t"m::i	Eosinophilic epithelioid cells surrounding prominent ectatic vessels	+	+/−	+	+	+	
Spindle cell lipoma	Mature adipocytes; bland spindle cells. Ropy collagen	N/A	+	N/A	−	N/A	CD99 S100+
Well-differentiated	Scattered cells w/irregular, hyperchromatic nuclei; fibrous stroma _+ adipocytes	+	+	−	−	N/A	MDM2 CDK4+

CAF, cellular angiofibroma; CD34, cluster of differentiation 34 antigen, a transmembrane adhesion molecule; CD99, cluster of differentiation 99, antigen, a heavily O-glycosylated transmembrane; CDK4, cyclin dependent kinase 4; ER/PR, estrogen receptor/progesterone receptor; MDM2, murine double minute 2, a p53 tumor suppressor gene; N/A = no data available; S100 protein, family of calcium binding proteins expressed in schwannomas, melanomas, and other tumors; SMA, smooth muscle actin.
[a] Table includes most common, but not all, pathologies in differential.

cytogenetic analysis was performed. Overall, the immunoprofile and histology supported the diagnosis of CAF. The patient had no evidence of recurrence at his 2-year follow-up and will continue with annual postoperative surveillance for 5 years postoperatively.

DISCUSSION

We present the first documented case of a rectal CAF presenting as a submucosal rectal mass. CAF has been reported as a benign mesenchymal tumor with spindle cells and prominent stromal blood vessels, most commonly occurring in the inguinoscrotal or vulvovaginal regions. In a case series of 51 patients, extragenital CAF was identified in the retroperitoneum and urethra, although the rectum has never been a previously reported site.[4] Because the location of this patient's tumor was so unusual, the preoperative workup and management posed diagnostic challenges.

Our asymptomatic patient had a recently negative screening colonoscopy and a rectal lesion incidentally found on surveillance MRI for prostate cancer. Although not visible on sigmoidoscopy, preoperative MRI and transrectal ultrasound identified a rectal subepithelial lesion (SEL). There is a broad differential of rectal SEL, including masses of intramural origin (ie, leiomyomas, lipomas, melanomas, GISTs, and carcinoid tumors) and masses of extra mural origin (ie, dermoid cysts and extramural tumor invasion).[5] Clinical management of these masses can range from observation to low anterior resection or abdominal perineal resection.[6] By contrast, CAF is a benign entity universally managed with wide local excision.[7,8]

In the literature, there is a 43%–79% agreement between presumptive EUS diagnosis and biopsy results and up to 27% of SEL of the gastrointestinal tract are malignant.[9,10] Nevertheless, preoperative tissue biopsy is performed on a case-by-case basis because of the risk of perforation and inadequate tissue sampling. In this case, the location of the rectal mass precluded preoperative tissue biopsy and the benign EUS features made surgical excision appropriate. EUS features that would encourage preoperative biopsy include tumor size >3 cm, irregular margins, or lymphadenopathy.[6]

CAF seems to have a benign clinical course, with a low risk of recurrence at the site of resection. Surgical resection with clear margins is the current standard for treatment.[8] However, little is known about postoperative management or whether the prognosis of CAF is dependent on the anatomical site. In addition to the characteristic spindle cell morphology, the pathologic diagnosis of CAF has evolved to include the presence or absence of immunostains.[11] Many, although not all, CAF are positive for CD34, a cell-cell adhesion molecule, and ER, as was seen in this patient. Other antibodies such as S100 protein, desmin, PR, α-SMA, Dog1, Stat6, and Cam5.2 are performed to exclude alternative diagnoses, such as melanoma (S100) or GIST (Dog1).[12]

Care also needs to be taken to differentiate CAFs from other soft tissue tumor types with overlapping pathology (Table 1). Many soft tissue tumors share microscopic characteristics but have different behavior.[3,13] For example, aggressive angiomyxoma (AAM) is locally infiltrating with a 30% local recurrence rate despite wide local excision.[3] AAM usually overexpresses desmin and a positive staining for it helps distinguish this aggressive tumor from other benign lesions.[14] The other mesenchymal tumors are considered to be benign based on limited clinical follow-up.[7] One series found 13 cases of CAF with sarcomatous transformation based on an abrupt histological transition to a sarcomatous component and p16 overexpression.[15] However, the clinical significance is uncertain, and these patients had good prognosis with no documented mortality. Next-generation sequencing studies may elucidate the molecular profiles of stromal cell tumors.[16]

DISCLOSURES

Author contributions: J. Bloom and E. Jordan wrote and edited the manuscript. X. Zhang, A. Saha, G. Yavorek and V. Kurbatov edited the manuscript. V. Kurbatov is the article guarantor.

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Informed consent was obtained for this case report.

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