

CASE REPORT

## Primary squamous cell carcinoma of the rectum: a case report and literature review

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Squamous cell carcinoma (SCC) of the rectum is a rare occurrence with an incidence rate of 0.1–0.25% per 1,000 cases. Herein, we report a case of a 52-year-old female who presented with a 2-month history of diffuse lower abdominal pain and hematochezia. Abdominal CT scan revealed a 7-cm irregular rectal mass, and the biopsy showed SCC.

Keywords: *squamous cell carcinoma; SCC; colorectal carcinoma*

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Squamous cell carcinoma (SCC) of the gastrointestinal (GI) tract is a rare occurrence and usually involves the esophagus or anal canal. Approximately, 90% of the cases of rectal cancer are adenocarcinoma. The remaining 10% consists of carcinomas, sarcomas, and lymphoid tumors (1). SCC accounts for 0.1–0.25% per 1,000 cases of colorectal carcinoma (2). We present a unique case of a patient with SCC of the rectum presenting with lower abdominal pain and significant weight loss.

### Case

A 52-year-old female was admitted with a 2-month history of diffuse lower abdominal pain and hematochezia. The pain was constant and pressure like. The patient was a non-smoker and non-drinker. Review of systems was pertinent for an unintentional weight loss of 10 lbs. Physical examination revealed diffuse lower abdominal tenderness and a firm, irregular anterior rectal mass. There were no signs of lymphadenopathy, and her skin examination was normal. Laboratory results showed a normocytic anemia with a hemoglobin of 8.8 g/dl and a CEA of 1.35 ng/ml. Human immunodeficiency virus (HIV) status was assessed, and the results were negative. Abdominal CT scan revealed a 7-cm irregular rectal mass with extra luminal compression of the recto-sigmoid area. The mass did not extend to the uterus as confirmed by transvaginal ultrasound. The patient underwent a

flexible sigmoidoscopy, which revealed a lesion beginning 5 cm from the anal verge and extending 17 cm. The lesion was semi-circumferential occupying 75% of lumen with superficial friability. Biopsy of the mass revealed invasive, moderately differentiated SCC (Fig. 1). Testing for human papilloma virus (HPV) of the mass came back negative. Pan-scan of all his body failed to show any primary source of SCC. The patient underwent surgery for rectum resection.

### Discussion

SCC of the rectum is very rare and presents in a similar fashion to rectal adenocarcinoma. Patients usually present with rectal bleeding, abdominal pain, change in bowel habits, and weight loss as was seen in our patient (3). The first recorded case of SCC was in 1919 in a 65-year-old male by Schmidtman (2, 3). Due to its rarity, epidemiological data, demographic risk factors, and the natural history of the pathogenicity of SCC are not well defined.

Over the course of this cancer history, certain criteria have been established for the diagnosis of SCC. In 1979, Williams et al. (4) established diagnostic criteria, which include: 1) primary SCC from distant sites must be excluded; 2) the bowel tumor must not have a squamous lined fistulous tract; 3) the tumor cannot be a proximal extension of SCC of the anus; and 4) the tumor must be histologically confirmed (3, 5).

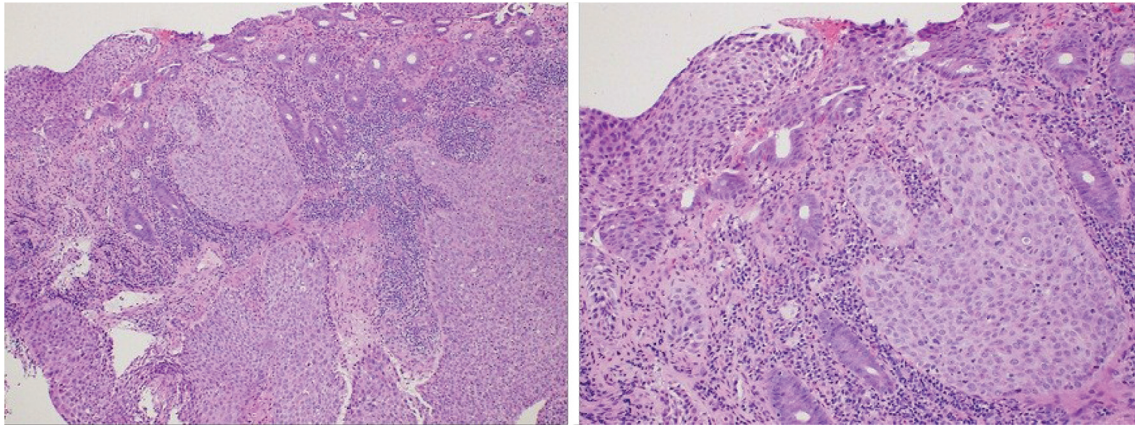


Fig. 1. Biopsy of the mass revealed invasive, moderately differentiated squamous cell carcinoma.

Proctoscopy/colonoscopy can be used to retrieve a biopsy sample for definitive histological analysis. The latter is used to differentiate SCC of the anus, which may present similarly (6). Immunohistochemistry is a useful tool in characterizing these tumors, especially cytokeratin stains CAM 5.2 and AE1/AE3 (7). CAM 5.2 is helpful in differentiating between anal SCC and rectal SCC; however, the drawback is rectal SCC, and adenocarcinomas have similar staining. AE1/AE3 stains positively for cells of squamous origin, helping to delineate less well-characterized lesions, such as primary acantholytic SCC and primary small cell undifferentiated carcinoma of the rectum (8, 9).

The pathogenesis of SCC is unclear. Studies suggest four possible hypotheses with regard to the pathophysiology of the SCC. The first hypothesis proposes that inflammation secondary to infection, inflammatory bowel disease (IBD), or radiation results in squamous metaplasia from which cancer may develop. The second hypothesis suggests that mucosal injury stimulates the proliferation of uncommitted basal cells into squamous cells, which then undergo malignant transformation. The third hypothesis states that squamous cell differentiation by pluripotent stem cells leads to SCC. This hypothesis is supported by the fact that squamous cancer cells are often found among poorly differentiated cells. The final hypothesis suggests that SCC arises from pre-existing adenomas or adenocarcinomas (1, 3, 10, 11). This is supported by case series in which adenocarcinomas show zones of squamous differentiation. Furthermore, studies suggest that HPV DNA can stimulate adenocarcinoma to transform into SCC (12).

Risk factors for SCC of the rectum have not clearly been established; however, there is an association with inflammatory processes such as ulcerative colitis, *entamoeba histolytica*, and HPV (13–15). There is a clear association between HPV and squamous cancers of the skin, oral, vaginal, penile, esophageal, and anal canal. The HPV subclasses most commonly associated with SCC include

16, 18, 31, and 33 (6). Ninety percent of anal SCC is positive for HPV DNA, relegating a correlation between the two occurrences. However, with regard to the association of HPV and carcinoma of columnar mucosa in the colorectum, studies have shown both positive and negative results using polymerase chain reaction or *in-situ* hybridization to detect HPV genome sequences with respect to adenocarcinoma, adeno-SCC, and SCC (16, 17). Kinjo et al. (12) reported that transfection of HPV DNA into cultured colonic adeno-SCCs can induce squamous metaplasia, but there are no reported cases of HPV directly causing squamous metaplasia of the rectum *in vivo* (16). It is well known that HPV infects squamous epithelium and causes a series of pre-malignant and malignant changes in the human body (17). Sites of direct possible exposure to HPV can lead to expression of viral oncogenes in lesions of squamous or basaloid origin. Individuals with high-risk sexual history, E6/E7 protein serum antibodies, or immunosuppression are at higher risk (17).

The primary treatment regarding colorectal SCC is surgical resection. Depending on the characteristics of size, location, depth of invasion, and local versus distant metastasis, local excision or radical resection can be recommended (6). In the case of Duke's B classification, local excision can be executed, but in advanced disease cases classified as Duke's C or D, radical excision may be recommended (6, 18). Lower anterior resection (LAR) is performed, if the lesion is located in the proximal two-thirds of colon. This procedure preserves the anus, distal rectum, and descending colon allowing for maintenance of rectal continuity (6). Abdominoperineal resection (APR) is recommended for lesions in the distal rectum or for focally advanced lesions with unassured disease-free margins. This procedure allows for excision of the anus and rectum as well as abdominal exploration for metastasis before ostomy placement (6). APRs lead to an increase in post-operative complications and poor long-term patient satisfaction (6). An alternative to surgical resection is chemoradiation therapy (CRT). CRT is

similar to the regimen used for the treatment of SCC of the anus; the results have shown good local control of the primary tumor (19, 20). Rasheed et al. (19) and Clark et al. (20) evaluated the success of CRT in two separate population groups. These treatment regimens primarily used 5-fluorouracil with either mitomycin-C or cisplatin and radiotherapy following the same treatment modality used for SCC of the anus (6, 19, 20).

In conclusion, SCC of rectum is a distinct entity, and it is important to shed some light on this rare condition because it has different epidemiology, etiology, pathogenicity's and requires a different treatment approach than other colorectal carcinomas. Surgery is the primary treatment which consists of local excision versus radical resection and the need for adjuvant therapy. Due to the low incidence of SCC, the ratio of surgical management compared with CRT is greater. However, CRT and surgical interventions have shown equal outcomes, but surgery has been the traditional form of management for patients with SCC.

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