Squamous cell carcinoma of colon and rectum

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ABSTRACT

Primary squamous cell carcinoma (SCC) of the colon and rectum is a rare malignancy. Less than 100 cases have been reported in literature. We report 2 cases of pure SCC involving the rectum and sigmoid colon. A review of literature has been made starting from the first report in 1919 to the present. We have examined the theories regarding the etiology, available treatment modalities, and prognosis for this variant of colorectal carcinoma. We conclude that this tumor presents later than adenocarcinoma and follows an aggressive course. With a greater awareness among surgeons and pathologists, more cases may become known leading to a better estimation of prevalence and clinicopathological behavior of this tumor.

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Colorectal cancer is the third most common malignancy among adults in Saudi Arabia.[1] The anal canal is well known to have squamous cell carcinoma (SCC), but carcinomas composed of squamous epithelium are rare in the colon and rectum.[2] Less than 100 cases of primary pure SCC have been reported in literature.[3] However, before it can be declared a primary tumor, metastasis from another site has to be ruled out and there should be no contiguity with any squamous epithelium lined structure.[2] We report 2 cases of pure SCC of the sigmoid colon and recto sigmoid junction, and present a review of the literature. We aim to create awareness among the clinicians dealing with colorectal carcinoma about this tumor, leading towards a better understanding of this entity and development of strategies for its management.

Case Report. ***Patient One.*** A 35-year-old male, presented with bleeding per rectum for 5 months. He had anorexia leading to significant weight loss. He also complained of dysuria, dribbling, and deep seated low back pain. Karnofsky's Performance Status (KPS)[4] based on the results of history and physical examination was 80. The KPS score is a reliable and validated quality of life measure, consisting of a 10-point incremental scale from 0 to 100, where lower score implies poor level of independent functioning and chemo or radiotherapy is not offered to patients with a low score. He did not have any significant risk factors for colonic malignancy, such as familial adenomatous polyposis, inflammatory bowel disease, schistosomiasis, radiation exposure or previous urological surgery. There was severe iron deficiency anemia (hemoglobin (Hb) 5.4 g/dl) and an immobile pelvic mass whose lower limited was unreachable. Digital rectal examination (DRE) revealed a normal anal canal and an anterior fixed mass 8 cm from the anal verge with blood clots on withdrawal. Colonoscopy also showed a tumor at 8 cm and additionally revealed another semi circumferential mass starting from 10 cm extending

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to 27 cm. A CT scan showed a rectal mass with presacral fat involvement, iliac lymphadenopathy and involvement of prostate, urinary bladder with right hydroureter and hydronephrosis. Upon cystoscopy, the right ureteric orifice was found blocked while bladder mucosal biopsies showed only acute on chronic inflammation. Carcinoembryonic antigen (CEA) was 1.8 ng/ml (Normal ≤ 3.4 ng/ml). There were no distant metastases, giving a Stage III with T4N2M0. The anemia was corrected with multiple transfusions. On the 8th post admission day, while the results of the colonoscopic biopsy carried out on the 4th post admission day were being awaited, the patient developed severe hematochezia. Urgent colonoscopy failed to control the ongoing hemorrhage, and the patient had to be rushed to the operating room. Due to gross infiltration of surrounding structures, the tumor was deemed irresectable. However, excision of the bleeding upper half of the tumor was achieved and sigmoid end colostomy with Hartmann's procedure was carried out. On the 5th postoperative day, the patient had a disruption of rectal stump. Upon re-exploration, the collection of pus was washed out, and abdominoperineal resection was completed after shaving the tumor off the urinary bladder. The perineal wound was left open to drain. After a turbulent postoperative course, marked by perineal wound infection and nosocomial pneumonia, the patient was discharged on the 29th postoperative day. The endoscopic biopsy, available before the second surgery and histopathology of the specimen, both revealed sheets of neoplastic squamous cells arising from normal rectal mucosa, giving a diagnosis of moderately differentiated SCC with vascular invasion (Figures 1 & 2). Mesorectal fat and lymph nodes were also involved. Due to severe hemorrhage necessitating operative intervention, no neo adjuvant treatment could be offered. However, he underwent postoperative chemotherapy but the tumor showed local recurrence as well as hepatic metastasis. He expired 11 months later.

Patient 2. A 68-year-old year old diabetic and hypertensive female presented to a district hospital with prolonged history of constipation alternating with diarrhea and distal colonic obstruction for 2 weeks. A transverse loop colostomy relieved the obstruction. Blood chemistry revealed renal impairment (Blood, urea, nitrogen (BUN) 24.1 mmol/dl and Serum Creatinine 404 umol/dl). She had no family history of colorectal carcinoma or any major predisposing factors. At presentation to our hospital 2 days postoperative, she was tolerating oral diet, but she was febrile (39°C), dyspneic and **cachexic** ???. Her CEA level was 8 ng/ml. Colonoscopy showed

Figure 1 - Photomicrograph demonstrating rectal mucosa and squamous cell carcinoma.

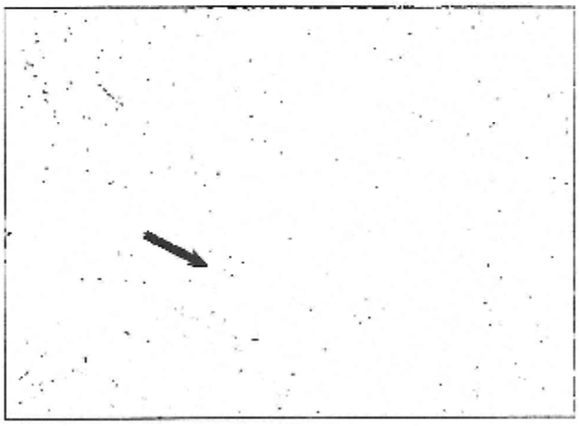

Figure 2 - High power photomicrograph showing rectal squamous cell carcinoma.

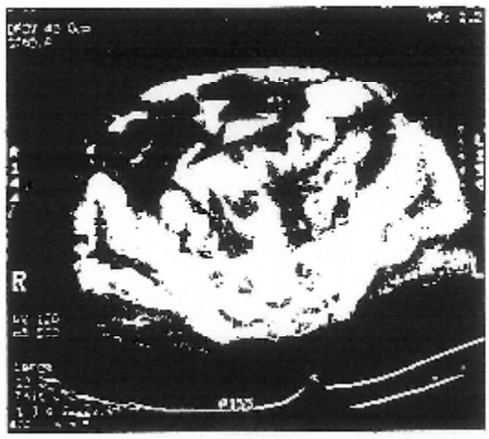

Figure 3 - Contrast enhanced CT scan showing stenosis in Case 2.

a fungating circumferential mass at 12 cm from the anal verge causing complete stenosis. Endoscopic examination via the transverse loop colostomy revealed no synchronous lesion. A CT scan showed a rectal and rectosigmoid junction mass (**Figure 3**) with extensive local infiltration causing bilateral hydroureter and hydronephrosis. Retroperitoneal lymph nodes and liver metastases were demonstrated. There was moderate ascites, pericardial effusion, bilateral pleural effusion and left basal atelectasis. Colonoscopic biopsy revealed poorly differentiated SCC. The pleural and ascitic fluid was negative for malignant cells. The patient was judged to have locally advanced tumor with distant metastasis. Duke's stage was D, and Stage IV with T4N2M1. The patient developed nosocomial pneumonia requiring ventilatory support for 23 days. Bilateral percutaneous nephrostomy relieved the obstructive uropathy, bringing her serum creatinine down to 137 umol/ml. The patient was judged to have a KPS of 40 after extubation and chemotherapy was not offered. Radiotherapy was refused by the patient. She was then discharged home on the family's request on palliative treatment. She developed pulmonary infection again 3 months later, for which admission was refused and she expired at home.

Discussion. The epithelium usually "breeds true": glandular epithelium generally gives rise to glandular neoplasms, squamous epithelium to squamous cell tumors and transitional cell epithelium to transitional tumors. However, deviant epithelial tumors do rarely occur. Sqamous cell carcinoma of the colon and rectum is such a case. Schmidtman published the first report of a pure SCC of the colon in 1919.[5] Since then approximately 100 such cases appear in the literature.3 Juturi et al have calculated the incidence of SCC of colon and rectum to be 0.25-0.1 per 1000 colorectal neoplasms on the basis of these reports.[6] A review of admissions for colorectal carcinoma in our center for the past 5 years revealed no other case of colorectal SCC, reflecting its reported rarity. However, since there is a lack of awareness about this possibility, some tumors with a sparse squamous component may not have been recognized. Several theories have been proposed regarding the pathogenesis of this tumor, amongst which neoplastic transformation of heterotrophic embryonic rests of squamous epithelium and even direct transformation of glandular epithelium into squamous cells are gaining support.[7] The role of carcinogens, like asbestos[3] is also being explored. Recently, a Unitarian concept has been proposed. The theory suggests that pluripotent stem cells of endodermal origin capable of multidirectional differentiation are present in colonic mucosa. The reports of stem cell carcinoma of colorectum with small cell, carcinoid, adenocarcinoma and squamous cell carcinoma support this hypothesis.[8] However, more work is needed before the question of pathogenesis can be considered settled. Lacking specific guidelines, the diagnostic workup for our patients followed the same protocol as the more common colorectal tumors. At present, this routine seems to be adequate for diagnosing as well as staging. However, as a tumor marker CEA may not be suitable as both our cases had nearly normal values. The proposed tumor marker for colorectal SCC is squamous cell carcinoma antigen (SCC Ag), which has already been used for SCC lung, uterus, cervix, esophagus, head and neck. Workers have reported elevations of SCC Ag correlating with recurrence of this disease.[9] Unfortunately, we were not able to get SCC Ag levels for either of our patients. Both the patients reported here presented as locally advanced left colonic tumors, which were deemed irresectable. However, a slight predominance of these tumors in the right colon has been reported.[2,10] There was involvement of ureters leading to obstructive uropathy and other adjacent structures. Both presented with complications, namely, hemorrhage and obstruction, and required emergency surgery. Our first case developed profuse hemorrhage per rectum and failure to control the hemorrhage by non surgical means precipitated the need for surgery, forestalling any plans for neo-adjuvant chemo or radiotherapy. Other workers have also reported advanced stage at presentation and an aggressive course.[2,3] This may indicate a more aggressive course of this variant of colorectal carcinoma. The treatment is primarily surgical. Adjuvant treatments can include Cisplatin/5-Florouracil based chemotherapy used for head and neck SCC.[10] Juturi et al[6] have also reported encouraging results, and even complete remission in one case using the same combination chemotherapy with addition of Leucoverin and GM-Colony Stimulating Factor. Radiotherapy may have a role as well. However, the condition has been encountered so rarely that adequate evaluation of adjuvant therapies has not been possible. We were able to complete chemotherapy for one of our patients, but did not appear to cause regression of disease and both died within one year of diagnosis. Regardless of the treatment, from the limited evidence available SCC emerges as a more aggressive tumor than adenocarcinoma.[6] Prognosis of this variant has been worse than adenocarcinoma. Based on the case reports, the 5-year actuarial survival shows a 50% survival for Dukes' B carcinomas, 33% for Dukes' C and 0% for Dukes' D.2

In conclusion, we can surmise that primary SCC of the colon and rectum is a rare tumor. However, it is important that surgeons and pathologists dealing with colorectal malignancy keep its existence in mind. Surgery is the mainstay of treatment, but chemoradiotherapy is being increasingly used, and the tumor may be responsive. The etiology is undecided, but the tumor appears to be more aggressive than adenocarcinoma and associated with a poorer prognosis. Perhaps with a greater awareness we will see more cases reported resulting in a better understanding of this variant of colorectal carcinoma leading to its recognition as a new entity.

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