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Colorectal Mucinous Adenocarcinoma in a 30-year-old Gentleman : A Rare Case Report

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ABSTRACT

Colorectal carcinoma is major cause of morbidity and mortality worldwide occurring in younger age group. Its histological subtype of mucinous adenocarcinoma (MC) is associated controversially with poor prognosis and rare regional lymph node metastasis. Family history of such malignancy is seen, if its microsatellite instability (MSI) associated. We present a rare case of a 30-year-old gentleman with recurrent episodes of dull aching pain in lower left abdomen, constipation, bleeding per rectum since last four years diagnosed as mucinous adenocarcinoma on histopathology and with family history of deaths due to mucinous colo-rectal carcinoma. On immunohistochemistry, CDX2 has been reported to be positive in 70% of colorectal mucinous adenocarcinoma, just like in our case.

KEYWORDS Mucinous adenocarcinoma, CDX_2

Introduction

Colorectal carcinoma is the fourth most commonly diagnosed malignant disease in the world occurring in younger patients.[1,2,3] Mucinous adenocarcinoma (MC) accounts for 10%-20% of all colo-rectal carcinoma cases, mostly reported in western literature than in South Asia/India. MC is associated with controversially based poorer prognosis than non-mucinous adenocarcinoma (non-MC) of colon because most MC cases have been reported in advanced stages.[1] MC should not be considered as an independent factor for poor prognosis because of controversial results.[4] As the local mucin production by this tumor is associated with doubtful low survival and poor prognosis by many retrospective studies,[1,3] the lesional topography and its presentation stage is more responsible for survival, than the histological type.[1] MRI is more sensitive than CT scan for diagnosing MC but the latter is more commonly done worldwide.[5] However, even though more prospective studies are needed on MC cases with systematic work-up, follow-up but, histopathology is still 'gold standard' for diagnosing the tumor. Histochemical stains like mucicarmine/PAS can help in diagnosing along with immunohistochemical studies like CDX_2.[1] We present one rare Indian MC case which was prospectively studied.

Case Report

A 30-year-old male patient came with complaints of lower abdominal pain, constipation, per rectal bleeds since last four years. Per rectal examination revealed a solid mass obscuring the lumen of the rectum. With clinical diagnosis of suspicious of malignancy, he was subjected to CT scan which confirmed it as a 8 x 5 cm annular growth with rectal wall thickening of 3 cm and obstruction which was unevenly concentric in recto-sigmoid region with heterogeneous enhancement pattern. Tumor showed low attenuation areas in more than 2/3rd of the tumor without intra-tumoral calcification or polypoidal growth or regional lymphadenopathy or peri-colic fat infiltration.

Further with CT guided biopsy, the diagnosis of adenocarcinoma was given. The surgeons subjected the patient for colostomy to overcome the obstructive complaints. He was later provided with radiation therapy followed by chemotherapy (four cycles) to localize the tumor and its spread. After completed cycles of chemo-radiotherapy, the patient was subjected to Abdomino-pelvic resection (APR) surgery.

The pre-operative work-up included: General examination which revealed a pulse rate of 80 beats per minute, BP-110/70 mm Hg, respiratory rate of 20 cycles per minute, in the afebrile patient. Per abdomen examination revealed soft palpable abdomen, with colostomy tube in right abdomen. CVS, RS, CNS examinations were within normal limit (WNL). CBC/PBS findings revealed Hb-8.6 g/dl, PCV-28%, RBC indices- WNL, TLC-5300, platelet count-300000/cu mm, moderate degree of normocytic normochromic anemia with relative neutrophilia.

Serum electrolytes revealed – sodium 133.7 mEq/lit, potassium 3.83 mEq/lit , chloride-88.9 mEq/lit. Urine examination-WNL. Kidney functions tests: Serum creatinine-0.85 mg/dl. Blood urea nitrogen 8.74 mg/dl, Blood urea 18.2 mg/dl.

Venous Doppler study of right lower limb showed subcutaneous edema as patient had complained of leg ache. No evidence of dilated venous channels or thrombosis.

The APR surgery confirmed the diagnosis of the tumor however it was subjected to final diagnosis on histopathology. We received a specimen labeled as Carcinoma of rectum-APR main specimen. It measured totally 29 cm in length. An infiltrative tumor seen measured about 8x4 cm gray white, firm to hard, circumferential solid growth. It was infiltrating into surrounding normal mucosa. Tumor was 19 cm away from the proximal surgical margin and 3.5cm from the distal resection margin. The distance of tumor from the dentate line was 1 cm. It involved the bowel circumferentially. Tumor perforation was absent. Rest of the colon in proximal portion away from the tumor was unremarkable. The mucosa near tumor appears thickened. No regional lymph nodes were identified. Two fibrofatty tissues in the specimen measured – 1.8x1.3x0.5 cm

and 0.7x0.5x0.5 cm respectively without lymph nodes were separately sent.

Sections studied revealed an aggressive mucinous malignant tumor, arising from neoplastic, infiltrative mucinous glands. There were extra–cellular mucin pools with infiltration deep into the muscularis propria (80% tumor component) (Fig. 1). Also poorly formed/abortive neoplastic glands were seen (10% of tumor) (Fig. 2). The aggressive tumor was dissecting through the bowel wall.

The extracellular mucin –pools had neoplastic, malignant cells lining the pools and singly dispersed. These individual tumor cells were highly pleomorphic cells with very scanty cytoplasm, round to oval hyperchromatic nuclei and inconspicuous to prominent nucleoli at places. Areas of hyalinization of stroma were seen, adjoining the extra-cellular mucin pools. Atypical mitotic figures were seen at places.

Also focal necrosis and intra-vascular tumor emboli were noted. Signet–ring like cells were also seen infiltrating the stroma at places (<10% tumor) (Fig. 2). Lymphatic emboli were seen. There was mixed inflammation in stroma-few neutrophils, lymphocytes, plasma cells, histiocytes with foreign body giant cell reaction.

The fat deposits adherent to the tumor did not show evidence of tumor.

The sections from fibrofatty tissue, separate from main specimen did not show evidence of tumor. Lymph nodes were not identified grossly and microscopically within appendices epiploicae/fat deposits. It was thus diagnosed as colo-rectal mucinous carcinoma. The tissue sections containing mucinous tumor areas were mucicarmine/PAS positive and was CDX2 positive on IHC.

Discussion

Mucinous adenocarcinoma (MC) is a rare histological subtype of adenocarcinoma occurring in young people.2 The youngest reported MC case was a 9-months old baby.6 It usually involves the proximal colon as the primary site, unlike our case.2

It is characterized by large pools of extracellular mucin with malignant cells in cords, columns and dispersed singly. MC generally has no local inflammatory response around the mucinous deposits, scanty desmoplastic stroma and peri-colic tumor nodules with gelatinous components more than the primary colo-rectal tumor compared to non-MC malignancies.[5] MC is often confused with signet ring cell carcinoma of colon which is rarer and more aggressive than the former because intra-cellular mucin can be confused with signet ring cells.[4] The differentiation is possible by using histochemical staining like mucicarmine/PAS which highlight the mucin and thus differentiate from signet ring cells, like in our case.[1]

MC cases have been categorized into1: 1) pure mucinous type (PMA)-with extracellular mucin more than, that of tumoral volume, like in our case; 2) mixed type-50 to 80% of extracellular mucin (MMA); 3) mixed type with <50% of extracellular mucin (mMA). Pure mucinous category has advanced stage of presentation.1,3 mMA category cases were more in number followed respectively by PMA and MMA by one study.1

There were two subtypes reported of MC cases in histopathology:4 Mucocellular type which had poorer 3-year survival rate compared to papillotubular type. Our case was of mucocellular subtype of MC and was of PMA category and so, had poor prognosis accordingly.1,4

Though microsatellite instability (MSI) is not an independent predictor for survival of MC cases, studies have shown that MSI associated MC cases had better prognosis than that of microsatellite stable MC cases.4 Family history of such colonic malignancy is seen, if its MSI associated. Hence there is importance of familial screening in such cases for bowel complaints.7 Our patient had family history of colonic malignancy, however this MSI tests were not carried out in our patient due to non-feasibility and non-affordability.

CDX2 has been reported to be positive in 70% of colorectal mucinous adenocarcinoma, just like in our case.7 Chemotherapy and radiotherapy are used as adjunct modes for control of local and distant metastasis or recurrence.[6] Accordingly, our MC patient was subjected to APR surgery after completion of chemo-radiotherapy. Most studies of MC are retrospective studies[2] and prospective study of cases is needed like in our case to understand this MC cases properly.

In conclusion, collaborative team-work between surgeons, physicians, radiologists, oncologists and pathologists is helpful in early diagnosis and control of disease. Effective family screening is important in such cases. A simple digital per rectal examination can help in diagnosis of colo-rectal malignancies with other radiological investigations. However even though histopathology remains the gold standard for MC diagnosis, immunohistochemistry-CDX_2 positivity can help just like histochemical stains.

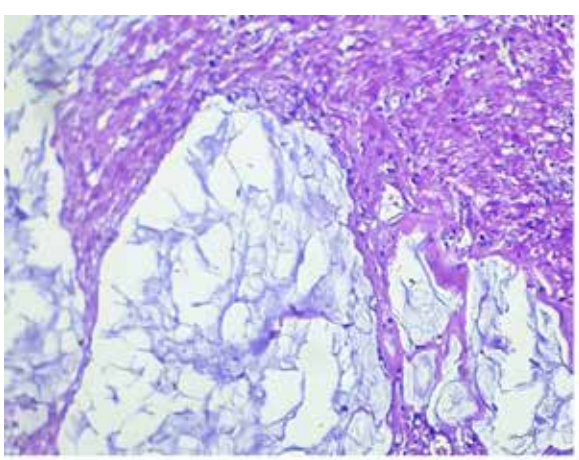

Figure 1a

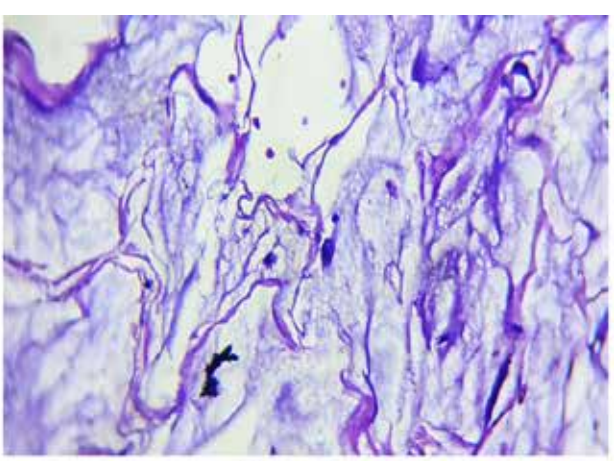

Figure 1b

Figure 1: 1a- Histopathological sections reveal extra–cellular mucin pools (80% tumor component) with infiltration deep into the muscularis propria (H&E, x40)

Figure 1: 1b- Malignant cells are seen lining the mucin pools and singly dispersed. These individual tumor cells were highly

pleomorphic cells with very scanty cytoplasm, round to oval hyperchromatic nuclei and inconspicuous to prominent nucleoli at places (H&E, x100).

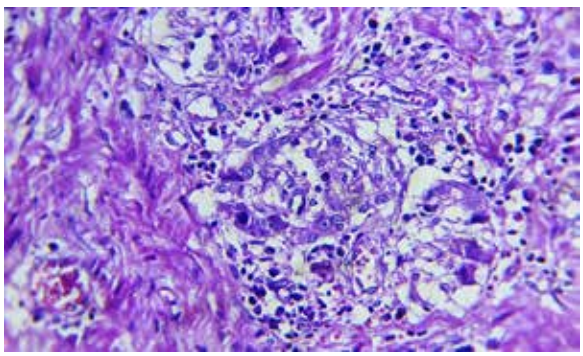

Figure 2: Sections revealed poorly formed/abortive neoplastic glands (10% of tumor). Signet–ring like cells were also seen infiltrating the stroma at places (<10% tumor), which later stained positive for mucicarmine/PAS (H&E, x400).

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