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CASE REPORT: A RARE CASE OF BREAST METASTASIS FROM MUCINOUS RECTAL CARCINOMA

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ABSTRACT

Introduction: There are few cases of breast metastases from colorectal cancer (CRC). The most common sites of metastases of colorectal cancer are the liver, lungs and the peritoneum. Breast metastases from colorectal cancers are very rare and metastases to distant sites signify a very poor prognosis.

We report a case of a chemotherapy and radiotherapy treatment naive patient who presented with clinical features suggestive of colorectal cancer, a groin mass and a breast mass. Biopsy and histopathological assessment of the rectal and breast mass samples showed rectal mucinous carcinoma and metastatic mucinous carcinoma respectively. Staging investigations done showed peritoneal deposits, inguinal and paraaortic lymph nodes involvement, but no metastasis to the lungs and liver. She however passed away approximately two months after presentation.

The awareness of the possibility of rectal cancer to metastasize to the breast is important, as this can be missed due to its location. A good history, physical examination, histology and immunohistochemistry are very vital for appropriate diagnosis and by extension treatment of these patients.

KEYWORDS: Metastases, Colorectal cancer, Mucinous Carcinoma, breast metastases.

INTRODUCTION

Colorectal cancer is currently the third leading cause of cancer death in the world and its incidence is steadily rising in developing nations.[1] Nineteen percent of patients newly diagnosed with colorectal cancer present with distant metastasis at the time of diagnosis.[2, 3] Colorectal cancers most typically metastasize to regional lymph nodes. The liver is the most common site of distant metastasis followed by the lungs and bones. Up to one quarter of liver metastases present synchronously, but most

commonly liver lesions develop metachronously following treatment of the primary colorectal tumor. Metastases from rectal cancer to multiple organs have been reported either as synchronous lesions or metachronous events.[4,5,6,7,8] Here, we present a case of breast metastasis from a colorectal carcinoma.

CASE REPORT

A 33-year-old female who presented to the Surgical Outpatient Department (SOPD) of Federal Teaching Hospital Gombe, with complaints of recurrent passage of loose stool, rectal bleeding, a right breast mass and a right groin mass. The recurrent loose stool was noticed about 2 years before, followed 1 year later with rectal bleeding and a right breast lump and then 4 months later with the right groin mass. There was a positive history of vomiting, tenesmus, change in bowel habits, blood in stool and weight loss. There was a positive history of combined oral contraceptive pills use. However, there was no history of smoking, alcohol use, history suggestive of polyps, inflammatory bowel disorder, prior history of managing a malignancy in the patient or a family history of breast, ovarian, pancreatic, colorectal, prostate carcinoma and/or other gastrointestinal malignancies. She had an appendectomy and a Caesarean section about 10 years and 2 years prior to presentation respectively.

On examination, a young woman, pale, afebrile, anicteric, not cyanosed and not dyspneic. On breast examination; the left breast had no abnormality, but the right breast had a 2x2 cm mass in the upper outer quadrant,1cm above the nipple areolar complex, mobile, not attached to overlying skin, attached to underlying structure, and no palpably enlarged axillary lymph nodes. Examination of the groin revealed a 4cm tender lump over the right femoral angle. Digital rectal examination revealed normal sphincteric tone and an irregular circumferential mucosal mass about 6cm from the anal verge.

Investigations, surgery for biopsy/histology and diversion colostomy were done. Intraoperative findings included, approximately 600 mL of straw-colored ascitic fluid, extensive nodules on the parietal and visceral peritoneum, frozen pelvis and the omentum was tethered to the pelvis mass.

The blood tests showed anemia (packed cell volume of 22%), thrombocytosis (621,000 cells/mm^3), hypokalemia (3.0 mmol/L) Prothrombin time of 25 seconds (normal range is 9-14 seconds), international normalized ratio (INR) of 2.1. Chest x-ray showed aortic unfolding but no metastases. Abdominopelvic ultrasound scan revealed a complex mass with cystic and solid components extending from the pelvis to the infraumblical region and involving both adnexae. The mass demonstrated hypervascularity on doppler interrogation. There was moderate ascites but it was difficult to assess the paraaortic lymph nodes due to overlying bowel gas. The ultrasound impressions were: 1. A huge pelvic mass from known rectal cancer and 2. Right obstructive uropathy with Nephritis secondary to the mass. Plain abdominal x-ray of the abdomen showed curvilinear luscencies beneath both hemidiaphragms in keeping with free air under the diaphragm, associated with multiple dilated loops of small bowel with relative paucity of bowel pad in the lower abdomen, with an impression of pneumoperitoneum with likely paralytic ileus made.

Magnetic resonance imaging findings (Figures 1A and 1B below) revealed marked nodular circumferential proximal rectal wall thickening with associated narrowing of its lumen associated with irregular polypoidal peri-colonic fat stranding surrounding the rectum. 2. Irregular extensive T1W hypointense mass which was predominantly hyperintense on T2W and showed heterogenous enhancement on post-contrast sequence involving the sigmoid colon up to its junction with the descending colon with a narrow zone of transition between them. The mass was seen to extend to the right iliac fossa. 3. There was resultant ascending obstruction of the right kidney, associated compression of the inferior vena cava (IVC) and displacement of the right iliac vessels. 4. Multiple enlarged pelvic and para-aortic lymph nodes were noted. 5. Mild ascites was noted within the pelvis suggestive of peritoneal involvement. 6. The uterus, urinary bladder and the left kidney demonstrates normal signal intensities with normal fat planes surrounding them. 7. Right sided anterior abdominal wall colostomy stump was noted, with impression of 1. Colorectal ca (stage T4aN2bMx) 2. Right sided obstructive uropathy secondary to (1) above.

Upon histological assessment, microscopic examination of the right breast lump showed effaced lymph node tissue infiltrated by a malignant epithelial neoplasm composed of pleomorphic cells disposed in glandular pattern floating in pools of mucin adjacent normal breast tissue was also seen. The features were in keeping with a metastatic mucinous adenocarcinoma. Microscopic examination of the right groin swelling showed a malignant epithelial neoplasm composed of pleomorphic cells disposed in glandular pattern within pools of mucin invading fibro-collagenous stroma and adjacent lymph node. Microscopic examination of the rectal tissue biopsy showed a malignant neoplasm composed of pleomorphic cells disposed also in glandular pattern within pools of mucin invading stroma. Other fragments show non-dysplastic rectal glands.

A multidisciplinary team (MDT) meeting was held involving the Oncologists, Pathologists, Radiologists and General Surgeons with conclusions to;

1) Perform immunohistochemistry on the breast mass using CK20.
2) Do a nutritional build up while awaiting report. She however passed on 3 days post the MDT meeting.

A B

Figure 1: MRI of the Pelvis. (A) Sagittal T2W and (B) coronal T2W showing multiple matted predominantly hyperintense pelvic masses extending to the lower abdomen.
Posthumously, CK20 immunohistochemistry on the right breast mass read positive, confirming a tumor of lower gastrointestinal origin.

DISCUSSION

Most breast metastases originate from the contralateral breast.[9] Metastatic spread from rectal cancer occurs both by lymphatic and hematogenous routes. Owing to the venous drainage into the portal system from the superior rectal vein, the liver is the most common site of distant metastasis from rectal cancer .[10] Metastases from colon to breast was first reported by McIntosh [11] and from rectum by Lal in 1999.[12] The awareness of this possibility is of great importance as these conditions may be missed. A handful of cases of rectal carcinoma metastases to the breast have been documented. These cases are often aggressive forms of disease as described in the present report, where most patients succumb to the aggressive course of the disease within a year of the diagnosis of the primary tumor. These metastatic lesions could be differentiated from primary breast tumors on the basis of the history, clinical and radiological features, morphology of tumor on histology and immunohistochemistry.[13]

Histologically, metastatic tumors show the morphological characteristics of the primary tumors. Excisional or incisional biopsy is the most commonly used procedure for the differential diagnosis.[14]

In majority of cases, immunohistochemistry can help to make an accurate diagnosis. Testing for expression of CK7 and CK20 is considered to be most beneficial. The great majority of primary breast cancers are CK7-positive and CK20-negative, while colorectal carcinomas are usually CK7-negative and CK20-positive. Mucinous differentiation of colorectal cancer is associated with poor outcomes. In our patient, the rectal, groin and breast tumors all showed mucinous differentiation.

Most patients succumb to the aggressive course of the disease within a year of the

diagnosis of the primary tumor. Our patient survived for barely 2 months from diagnosis.

Management of colorectal carcinoma involves a multi-disciplinary approach comprising of the Clinical and Radiation Oncologists, the Histopathologists, the General Surgeons, the Radiologists, the Internists, the Dietitians and the Pain and Palliative units. Treatment of metastatic colorectal carcinoma involves systemic chemotherapy targeting the primary tumor and there may be need for metastasectomy, though mainly palliative.

CONCLUSION

In conclusion, a breast mass in a patient with a known primary rectal tumour should be considered as a breast metastasis and explored despite its rare occurrence.

Conflict of Interest

None.

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