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Case Report

Synchronous breast and colon cancer in a young female: a single stage surgery

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ABSTRACT

Synchronous breast and colon cancers are rare, particularly in the absence of family history. Synchronous tumors should always be kept in mind during the staging workup for the primary malignancy. There are no definitive guidelines for the management of synchronous tumors, thus the involvement of tumour board multidisciplinary team is essential. We present a case of a young female patient who was diagnosed with synchronous breast and colon cancer. A handful of synchronous breast and colon cancer cases have been reported and operated at intervals, but up to our knowledge this is the first case operated simultaneously in a single stage surgery.

Keywords: Synchronous cancer, Second primary cancer, Colorectal cancer, Breast

INTRODUCTION

The incidence of multiple primary cancers ranges from 0.73–11%, and can be divided into synchronous and metachronous tumours.[1] Synchronous tumors are defined as two different tumors originating in the same patient that are detected at the same time or within six months of primary tumour diagnosis, whereas tumors developing six months after primary tumour detection are called metachronous tumours.[2] Synchronous breast and colon cancers are rare, particularly in the absence of family history.

We present a case of a young female patient who was diagnosed with synchronous breast and colon cancer. This case presents a therapeutic and surgical challenge in management plan for optimum oncological results. It also highlights the crucial role of tumour board multidisciplinary team (MDT) in discussing such cases and providing the best treatment cooperatively.

A handful of synchronous breast and colon cancer cases have been reported and operated at intervals, but up to our knowledge this is the first case operated simultaneously in the same day and same operation setting.

CASE REPORT

A 46-year-old Bahraini female, presented to our surgical clinic with two months history of left breast lump noticed upon self-examination. She denied nipple discharge and skin changes. Patient has no past medical history, expect sleeve gastrectomy five years back.

Patient has no family history or significant risk factors for breast cancer. Patient underwent triple assessment of the breast mass. Clinical examination showed 5×5 cm left breast mass at 11 o clock with no skin changes, no nipple discharge, and no palpable axillary lymph nodes. Right breast and axilla was unremarkable. Ultrasound showed left breast 7×8×8 mm ill-defined irregular hypoechoic lesion at the same location. No significant lymphadenopathy (Figure 1). Mammogram showed heterogeneous density of breast tissue, with left breast upper inner quadrant 2.2×1.4 cm area of architectural distortion (Figure 2). Core biopsy of the left breast lesion

revealed invasive ductal carcinoma grade I. Immunohistochemistry (IHC) showed positive oestrogen receptor (ER) and progesterone receptor (PR).

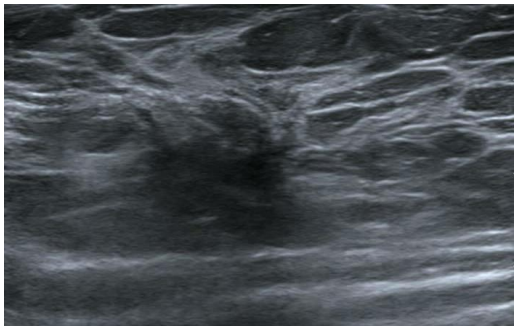

Figure 1: Left breast ultrasound at 11 o'clock showing 7×8×8 mm ill-defined irregular hypoechoic lesion.

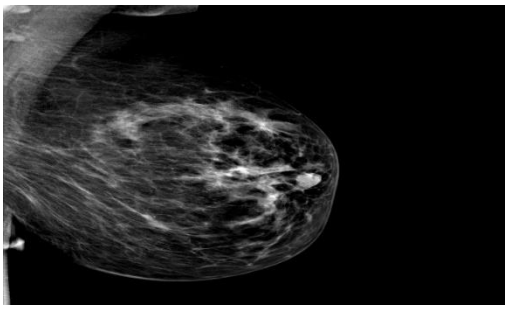

Figure 2: Left breast mammogram showing upper inner quadrant area of architectural distortion.

Human epidermal growth factor receptor (HER2-neu) was negative, and Ki-67 was low at 2%. Lab examination was unremarkable, except for anemia (Hemoglobin: 6.9 g/dl) which required further investigations and colonoscopy. CT scan of chest abdomen and pelvis showed left upper aspect breast 7×5 mm enhancing lesion corresponding to the diagnosed left breast cancer, and no suspicious axillary lymphadenopathy. No evidence of pulmonary, hepatic or bone metastasis. In addition, irregular distal ascending colon wall thickening was seen and suggestive of extraserosal extension highly suspicious of primary colonic tumour. Colonoscopy was done, and biopsy was taken from the friable ascending colon tumour. Histopathology revealed moderately differentiated adenocarcinoma of the ascending colon. IHC showed preserved MutS homolog 2 protein (MSH-2), MutL homolog 1 protein (MLH-1), Mismatch repair endonuclease gene (PMS-2) and MutS homolog 6 protein (MSH6) with no noted microsatellite instability. Our pathology department also performed ER, PR and HER2-neu IHC on the colon specimen to ensure that the colon adenocarcinoma represents a primary malignancy and not metastasis from breast carcinoma. PET CT scan showed a metabolically active fluorodeoxyglucose (FDG) avid hepatic flexure colonic lesion with an approximated length of 3.4cm, SUV max 18.3. No FDG avid lesions could be detected in the left breast. Small sized left axillary lymph nodes are seen showing no abnormal FDG activity (Figure 3). The rest of the scan was negative for distant of bony metastasis. MRI breast showed left breast multiple interconnecting regions of irregular non mass enhancement extending between 6-11 o clocks with the largest being at 11 o clock with a size of 20 mm.

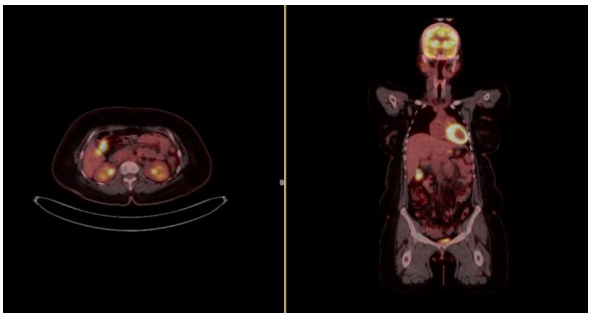

Figure 3: Metabolically active FDG avid colonic lesion is seen at the hepatic flexure for a segment measuring around 3.4 cm with SUVmax~18.3.

The case was discussed at the MDT meeting with the diagnosis of synchronous breast and colon cancer, and agreed for surgery of both tumour sites. In the operation, patient first underwent left breast mastectomy and left sentinel axillary lymph node biopsy and dissection with immediate reconstruction using Becker implant, followed by laparoscopic right hemicolectomy in the same operation setting. Patient had an uneventful surgery and hospital course and was discharged on 6th operative day.

Histopathological examination of the breast and axilla specimen showed invasive lobular carcinoma grade 1, with 3 out of 34 axillary lymph nodes positive for metastatic carcinoma, confirming the pathological staging of T2N1aM0. As for the second primary, the colon specimen relieved a tumour size of 2×1.5×5 cm well to moderately differentiated adenocarcinoma at hepatic flexure, with local invasion beyond muscularis propria into serosal fat, and clean resection margins (R0). A total number of 28 lymph nodes were harvested, with metastasis seen. The pathological stage was T3N0Mx. Patient was followed up closely in outpatient clinic was referred to the oncology department for adjuvant therapy FEC (fluorouracil epirubicin cyclophosphamide) as recommended by the MDT along with oncotype genetic testing. No post-operative complications were noted.

DISCUSSION

The clinical and pathological features of synchronous tumours of the breast and colon are not fully established.[3] The incidence of breast and colon cancer in women at the same time is 3.85%.[4] Different malignancies have been diagnosed in coexistence with breast cancer.[5] Up to 35% of patients with colorectal cancer have a family history of the disease, suggesting a hereditary predisposition, while only 10% of breast cancer are familial in nature.[5] It has been proven that there is correlation between family history and synchronous tumours.[6] A specific genetic

mutation, CHEK2*1100delC (CHEK2), has been proposed as a tool to detect synchronous tumors.[7,8] It has been reported to be a low-penetrance breast cancer-predisposing gene associated with a threefold to fivefold increased risk of breast cancer.[9]

It has also been shown to confer a risk of colorectal cancer in patients with hereditary non-polyposis colorectal cancer (HNPCC).[7] Its function by either conferring a high risk of one cancer type and a slightly elevated risk of the other or through a predisposition to one of the two cancers and chance occurrence of the other, may help to explain synchronous occurrence of breast and colon cancer.[10] MSH-2, MSH-6, MLH-1 and PMS-2, which are associated with familial Lynch syndrome or HNPCC, were all preserved in the colonic specimen resected in our patient.

The likelihood of missing asymptomatic synchronous tumors at the time of diagnosis is due to a lack of definitively set guidelines for synchronous tumors. Various imaging modalities such as CT, MRI, and PET-CT are used in the staging and monitoring of malignancies, and it should always be kept in mind that synchronous tumors may be encountered during their evaluation.[10,11]

There are currently no definitive clinical guidelines for treatment pathway of synchronous tumours.8,10 Therefore, treatment should be individualized for each patient through MDT meeting in order to provide the best outcome.[5,11] Our cases were discussed thoroughly in the MDT, and agreed to proceed with breast surgery followed by colon at the same setting, given the surgeons expertise. Similar cases reported have opted to start with breast followed by colon surgery 1-2weeks later.[3,12] This is based on the fact that mastectomy is thought to have less morbidity, allowing for another stage surgery at a short period of time. As well as that, the detected colon cancer is picked up on staging and not through an acute presentation such as obstruction.

As for cases which require neoadjuvent treatment for locally advanced breast cancer, colon surgery can be done first followed by anticancer therapy and breast surgery.[5] Our patient did not require neoadjuvent therapy, and her colon cancer was not obstructing, thus she underwent simultaneous surgery of both primary cancers. She had an uneventful surgery and recovery following the single stage surgery.

CONCLUSION

Synchronous breast and colon cancers are rare, particularly in the absence of family history. There are no definitive guidelines for the management of synchronous tumors. Therefore, treatment should be individualized for each patient through multidisciplinary team. Single stage surgery is safe and effective, given the preference and surgeon's experience.

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