Synchronous breast and colonic cancers : A case report

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ABSTRACT

Introduction:
Multiple Primary Malignant Neoplasms (MPMNs) are increasingly diagnosed despite their rare occurrence. Related risk factors are familial syndromes and common exposures such as smoking, however the pathophysiology could be different for each. MPMNs are synchronous or metachronous, and can occur in single or different organs.

Case Presentation:
A 68 year old lady , came to the clinic with a lump in right breast and an inverted nipple as well as anaemia. No family history of breast, or bowel cancer. Breast imaging showed a mass with speculated margins measuring 4x3cm and enlarged right axillary lymphadenopathy. The biopsy showed node positive, ER +ve, Her-2 -ve, grade 3 invasive ductal carcinoma (No Special Type). Colonoscopy detected 50mm ascending colon polyp, the biopsy showed moderately differentiated adenocarcinoma. The Breast MDT recommended that the patient will require upfront chemotherapy for the breast cancer preceding any breast surgery. She was commenced on hormonal blockade for breast cancer, and underwent laparoscopic right hemicolectomy. The histology indicated 31mm moderately differentiated adenocarcinoma. The cancer was positive for MSH6 expression, this supports the Lynch syndrome diagnosis. After recovery the patient received her breast chemotherapy followed by mastectomy and axillary clearance. This detected no residual invasive carcinoma in the breast, however, there was 1 mm DCIS, with two involved lymph nodes. Radiotherapy to the chest wall and supraclavicular fossa, hormonal manipulation with aromatase inhibitor (Letrozole) and bisphosphonate were recommended.

Discussion:
When a second primary malignancy detected within 6 months from the diagnosis of the first tumour, it is referred to as synchronous neoplasms, if the second tumour detected 6 months after the first diagnosed one, then the term metachronous neoplasms is applied. A mutation in several genes involved in DNA mismatch repair are being identified as a cause of Lynch syndrome, those include: *MLH1, MSH6, AMS2, APCAM, PMS2*. It is known to be associated with increased lifetime risk of developing colon, endometrial, ovarian and breast cancer. Few other cancers had been reported coexisting with breast malignancy such as ovarian, renal, and thyroid cancers. On the other hand, colon cancer has been detected in coexistence with uterine, ovarian, and breast cancers.
The diagnosis of MPMNs is becoming more encountered and reported, this could be as a result of increased life span, better diagnostic facilities and easier reporting system. The details of its bio-pathology is still unclear however, some associated risk factors had been mentioned like exposure to carcinogens such as smoking, radiation, hormonal therapy and immuno-modulation.

Conclusion:
Confirmed MPMNs have to be assessed and staged separately, where the management plan should be agreed by the different specialities in view to achieve optimum treatment outcome.

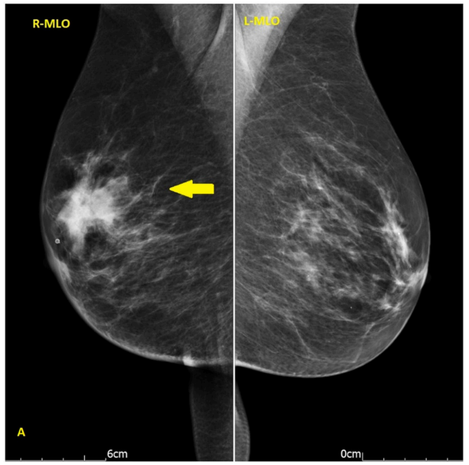


Figure 1: Mammography mediolateral oblique (MLO) view showed a soft tissue density in the right breast with speculated margins measured 42x30 mm (yellow arrow)

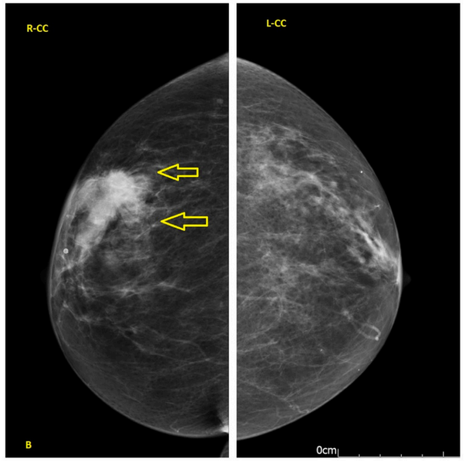


Figure 2: Craniocaudal (CC) view showed a soft tissue density in the right breast with speculated margins measured 42x30 mm (yellow arrow).

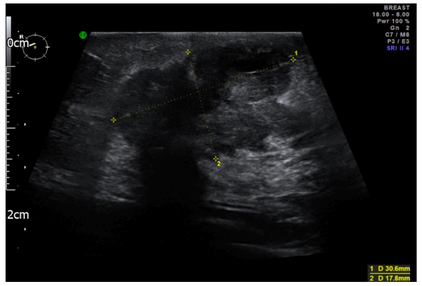


Figure 3: Ultrasound right breast reported a speculated diffuse hypoecoic lesion in the right breast lower outer quadrant with an appearance suggestive of a neoplastic lesion

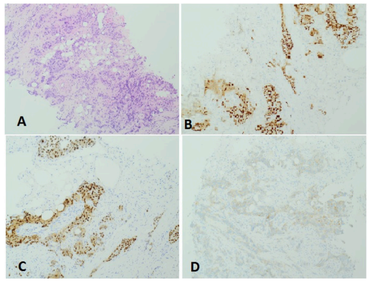


Figure 4: Breast core biopsy; (A) H&E stain showed grade 3 breast invasive ductal carcinoma (B) ER +ve, (C) PR +ve, (D) Her2 –ve.H&E: hematoxylin and eosin, ER: estrogen receptor, PR: progesterone receptor, Her2: human epidermal growth factor receptor 2

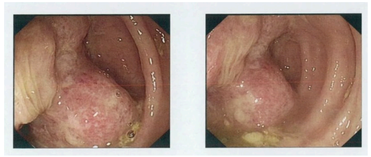


Figure 5: Colonoscopy demonstrating a distal ascending colon malignant looking sessile polyp, 50 mm in diameter.

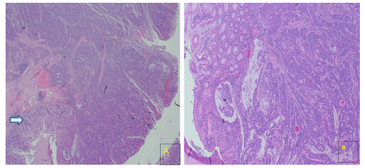


Figure 6: Resection specimen of colon at 1.25 magnification, with adenocarcinoma. Arrow indicates adjacent normal colonic mucosa. B: At higher magnification x4. The adenocarcinoma is moderately differentiated.



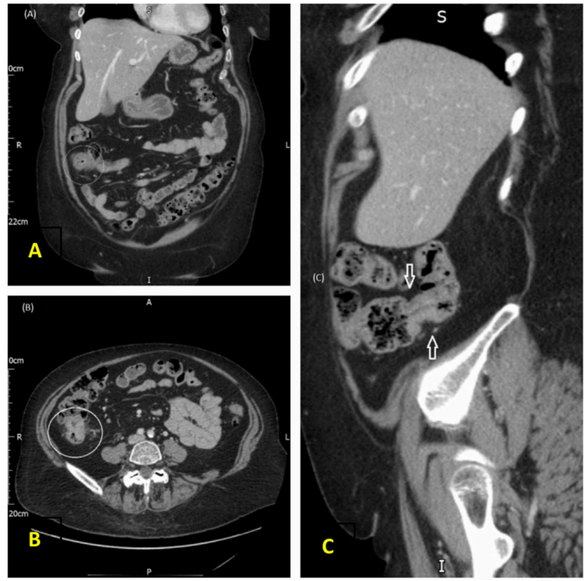


Figure 7: CT abdomen (A) coronal plane, (B) axial plane, (C) sagittal plane, there is a focal spot of wall thickening in the mid ascending colon.

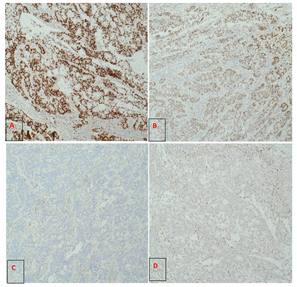


Figure 8: (A) Colonic tumour strongly positive for MSH6 9 (MutS homolog 6 9)x10, (B) week staining for MSH2 (MutS homolog2) x10, (C) MLH1 (MutL homolog 1) is completely negative x10, (D) PMS2 (PMS1 Homolog 2) completely negative x10. Note: The positive – brown cells in the background of (D) are lymphoid cells.

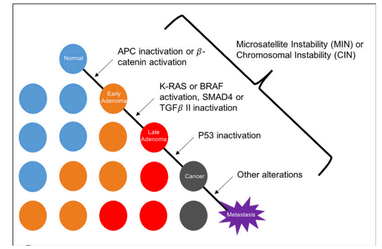


Figure 9: Progressive somatic mutational steps in the development of colon carcinoma. The accumulation of alterations in a number of different genes results in the progression from normal epithelium through adenoma to full-blown carcinoma. Genetic instability (microsatellite or chromosomal) accelerates the progression by increasing likelihood of mutation at each step. Patients with familial polyposis are already one step into this pathway, since they inherit a germline alteration of the APC gene. Adapted from Fauci et al. (2008).

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