

Co-existent breast and renal cancer

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ABSTRACT

The concomitant presence of breast cancer with one or more other types of cancer such as colon, vulva, lung, larynx, liver, uterus and kidneys has been presented in the literature. However, synchronous breast and renal cancer is very uncommon. Herein we present a woman with synchronous breast and renal cancer, and review the literature. A 77-year-old post-menopausal woman was admitted to our clinic complaining of left sided breast mass. On physical examination, there was a 3 cm palpable mass in the upper outer quadrant of the left breast along with a conglomerate of lymph nodes in the left axilla. Ultrasonography and mammography showed a 3 cm solid, hypoechoic mass in the upper outer quadrant and left axillary lymphadenopathy. The tru-cut biopsy of the lesion revealed invasive ductal carcinoma. The bone scintigraphy, thoracic and cranial computerized tomographies were normal. The abdominal computerized tomography identified a 3x3 cm solid renal mass with heterogeneous contrast enhancement in the posterior segment of the lower pole, which was suspicious for renal cell carcinoma. Breast conserving surgery and axillary lymph node dissection was performed, and the pathology specimen demonstrated invasive ductal carcinoma. The patient was discharged on postoperative day 5. Three weeks later partial nephrectomy was performed by urology department for the solid renal mass, and the pathology result showed clear cell-renal carcinoma with Fuhrman grade 3. The patient is being followed-up for renal carcinoma, and underwent radiotherapy for breast cancer. Hormonotherapy for breast cancer is still continuing.

Keywords: Breast cancer, renal cell carcinoma, synchronous tumors

INTRODUCTION

The occurrence of multiple cancers in one patient is a rare phenomenon, and the frequency of synchronous neoplasms is less common than that of metachronous tumors (1). Synchronous tumors are defined as presence of a second tumor at the same time with the first tumor or within the first 6 months following diagnosis (2). Secondary neoplasms that do not comply with this rule are called metachronous tumors. The incidence of multiple primary malignant tumors increases with age. In addition to these, the presence of family history and genetic predisposition are factors associated with increased risk (3).

Breast cancer is the most common type of malignancy in women. On the other hand, renal cell carcinoma (RCC) is the most common tumor of the kidney, constituting 2-3% of all cancers in adults (4). The concomitant presence of breast cancer with one or more other type of cancers such as the colon, vulva, lung, larynx, liver, uterus and kidneys has been presented in the literature (4). The association of kidney cancer with synchronous and metachronous cancer in similar organs has been reported in the literature (1, 5). However, reports on synchronous breast and renal cancer are very uncommon (1, 4).

Herein we present a woman with breast cancer who was diagnosed with RCC during metastasis work-up, along with review of the literature.

CASE PRESENTATION

A 77-year-old postmenopausal woman presented to our outpatient clinics complaining of a mass in her left breast. On physical examination, there was a mass approximately 3 cm in diameter in the upper outer quadrant of the left breast and axillary conglomerated lymphadenopathy. The ultrasound and mammography revealed a mass in the upper outer quadrant of the left breast and axillary lymphadenopathy, and the tru-cut biopsy revealed invasive ductal breast carcinoma. The routine work-up for distant metastases included bone scintigraphy, cranial and chest computed tomography. The abdominal computed tomography showed a 3 cm, heterogeneous, solid mass in the left kidney with heterogeneous contrast enhancement, which indicated RCC. It was decided to perform nephrectomy by urology department after surgery for breast cancer. The patient first underwent breast conserving surgery and axillary dissection. The histopathology was consistent with invasive ductal carcinoma (Figure 1). The tumor was 85% strong positive for estrogen receptor, and 35% strong positive for progesterone receptor, while it was

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negative for C-erb-B2. The tumor was 3 cm in diameter, the surgical margins were negative and two of the 18 dissected axillary lymph nodes harbored metastatic breast carcinoma. The patient was discharged on the fifth postoperative day, and underwent partial nephrectomy 3 weeks later. The histopathologic evaluation showed a 3.5 cm tumor confined to the kidney that was compatible with Fuhrman grade 3 clear cell renal cell carcinoma (Figure 2). The parenchymal and peripheral surgical margins were negative. The patient was discussed in the Oncology Council, and was planned for radiotherapy + hormonal therapy. The patient completed her radiotherapy course, and she is receiving hormonal therapy with aromatase inhibitor (letrozole 2.5 mg/day). She is being followed-up uneventfully at the 16th postoperative month.

DISCUSSION

Synchronous multiple primary tumors are very rare (1). Several synchronous multiple tumors were reported in the genitourinary and gastrointestinal tract (3). Synchronous primary carcinoma is known to arise in multiple organs, and the incidence is reported between 0.73 to 11.7% (2). Three criteria are proposed for the definition of multiple primary cancers; 1) Each tumor must fulfill the criteria for its own tumor properties, 2)

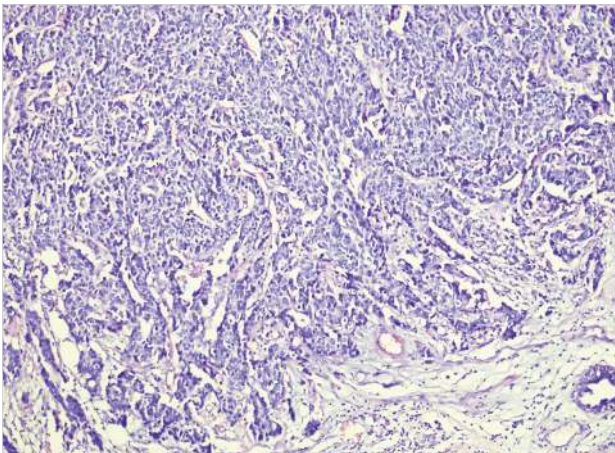


Figure 1. Invasive breast carcinoma showing diffuse infiltrative expansion; breast acinar structure with columnar cell replacement is shown on the right lower corner (H&E x100)

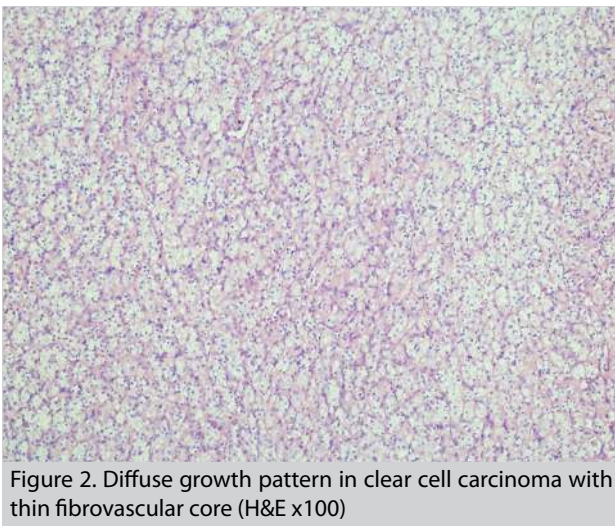


Figure 2. Diffuse growth pattern in clear cell carcinoma with thin fibrovascular core (H&E x100)

The two tumors must be sufficiently distant from each other, 3) It should be excluded with certainty that the second tumor is not the metastasis of the index tumor (6). Synchronous tumors in our case fulfilled all three criteria. The location of these tumors are classified into 4 different categories: Two different carcinomas 1) in the same organ or tissue, 2) in anatomical or functionally similar organs (colon-rectum), 3) in paired organs such as the breast, and 4) incidentally detected tumors in unrelated organs detected during investigations due to another cause (6). Our case had another tumor detected incidentally during screening for metastasis in an unrelated organ.

The coexistence of breast cancer with synchronous or metachronous tumors of other organs have been previously reported (6), similar to the association of RCC with other tumors (5). However, reports on the co-presence of these two entities are very rare in the literature (4). The tumor's biological behavior, patient age, life expectancy, and presence of co-morbidities influence treatment strategy and prognosis in multiple primary tumors (7). In our case, the presence of a second tumor was detected during radiologic evaluation after diagnosis of breast cancer. This lesion could also have been metastatic, but was clinically and radiologically judged as a primary kidney tumor. Therefore, it was decided to perform surgery for both tumors. The histopathologic evaluation after partial nephrectomy, which was done after surgery for breast cancer, confirmed the diagnosis of RCC.

Secondary primary malignancies are usually detected incidentally during preoperative screening for distant metastases; thus giving rise to a dilemma on if the treatment should be applied at different times or simultaneously, and if at different times which tumor should be addressed first. The ideal approach should be simultaneous resection of both tumors. However, this is not possible in many cases. That is why treating the more aggressive malignancy first, followed by the second tumor may be the most appropriate approach. In the literature, the co-existence of breast and kidney cancer is very rare, and there is no clear consensus on the priority in treatment planning due to lack of adequate data. In our case, it was thought that breast cancer might have been the more aggressive tumor and was given treatment priority. The postoperative histopathologic staging of both tumors revealed T2N1M0 breast cancer (Stage 2B), and T1aN0M0 (Stage 1) kidney cancer. The average 5-year survival rate in Stage 2B breast cancer has increased from 71% to 80% with early screening methods and improvements in local and systemic treatment (8), while this rate varies between 90-100% for stage 1 kidney cancer (9). These data indicate that treating breast cancer initially in our case was appropriate, although in cases in whom simultaneous tumor surgery cannot be performed we believe that the decision on treatment priority should be individualized.

Exposure to carcinogenic factors such as tobacco and alcohol use, presence of genetic predisposition (Li-Fraumeni or Beckwith-Wiedemann Syndrome), the presence of history of side effects with previous chemotherapy and radiotherapy are factors that increase the risk of developing secondary cancers (7). Interestingly, our case did not have any of these risk factors.

Koutsopoulos et al. (10) related presence of multiple tumors to an assembly of different risk factors and long life expectancy. In today's conditions, since life expectancy is prolonged with early diagnosis and treatment of oncologic diseases, we believe that the incidence of secondary malignancies will increase.

CONCLUSION

Screening for distant metastasis should be done according to disease stage after diagnosing breast cancer, and it should be kept in mind that existing or subsequent masses may be secondary malignancies as well as metastatic lesions. It should also be considered that patients with primary cancer of the breast or any other organ may develop secondary tumors later during their lifetime.

Informed Consent: Written informed consent was obtained from patient who participated in this case.

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