

Synchronous Primary Breast Cancer and Renal Cell Carcinoma: A Rare Case Report

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Abstract

Primary synchronous breast and renal cancer is very rare. Bladder, prostate, colorectal and lung cancer are the most common synchronous primaries with Renal Cell Carcinoma (RCC) identified till date. We found metachronous tumours of breast with RCC in literature search which included both metastatic tumours as well second primaries.

In this study, we represent a case of synchronous ductal breast carcinoma and RCC which is very rare because most of the multiple malignancies reported in the literature are metastatic tumours or metachronous breast malignancy with RCC.

Keywords: Dual malignancy, Metachronous cancer, Metastasis, Synchronous cancer, breast cancer, RCC.

Introduction:

Kidney cancer is one of the most common malignancies affecting adults worldwide. accounting for 4% of all malignancies [1]. Clear cell is the most common histological variant (70%), followed by the papillary RCC (10%) [2]. Kidney cancer is often detected incidentally during routine imaging for other causes rather than presenting symptomatically [3]. In Saudi Arabia, its incidence has increased at a rate of 2%-3%, with most cases presenting late in the disease course [4, 5]. Bladder, prostate, colorectal and lung cancer are the most common synchronous primaries with Renal Cell Carcinoma (RCC) identified till date [6, 7]. Primary synchronous breast and renal cancer is even rare [6].

We present a case of middle age lady with breast cancer and incidental synchronous primary RCC.

Case report:

A 47-year-old lady referred to department of radiology for mammography screening. There is no relevant past or family history.

Mammogram showed nodular heterogeneous density with tail like extension of size 1.5 cm x 1 cm, with a satellite lesion in the left axillary

tail of size 1.4 cm, highly suggestive of malignancy, (BIRADS V). (Figure 1).

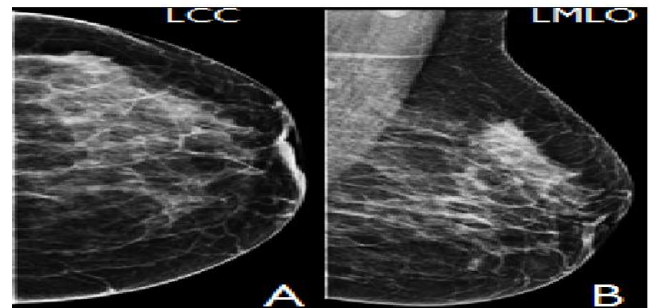


Figure 1: Left breast: (A) Cranio - caudal view. (B) Mediolateral view.

US of the left breast was performed and it showed an ill-defined mass associated with microcalcifications left breast, as well as suspicious left axillary lymph node with thickened cortex highly suggestive of malignancy (figure 2).

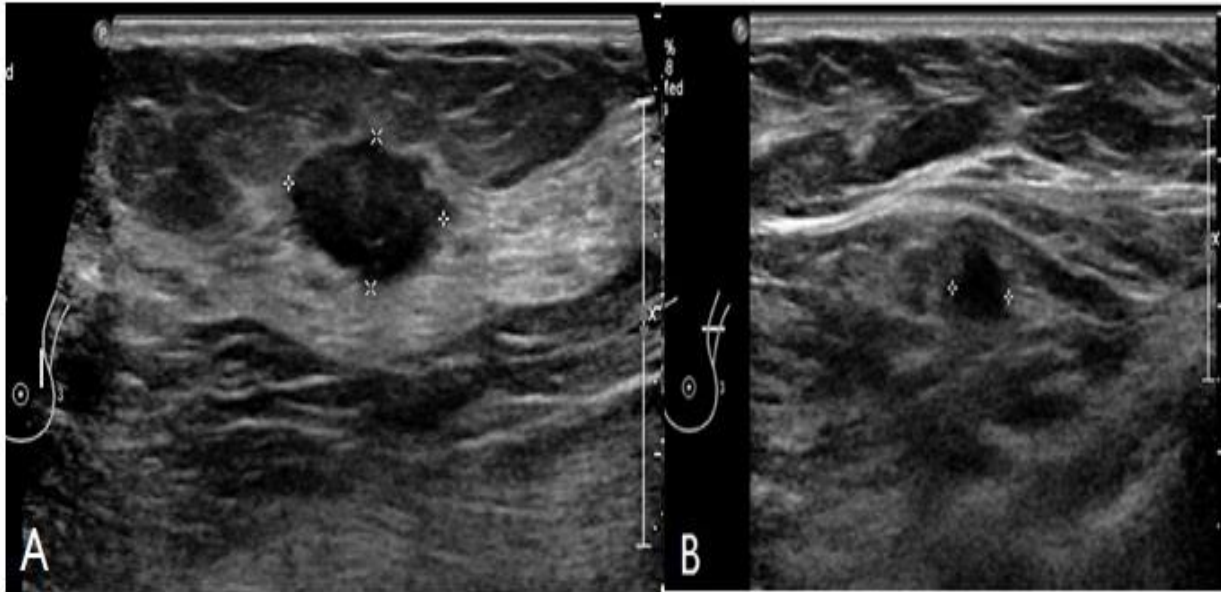


Figure 2: Left Breast Ultrasound:

- A. There is an ill-defined hypoechoic mass with heterogeneous texture seen at 1 o'clock left breast. It measures 1.5 x 1 cm in dimensions corresponding with area of mammographic concern highly suspicious for malignancy.
- B. One of the left axillary lymph nodes showed thickened cortex. It measures 1.4 cm with cortical thickness of 0.6, highly suspicious for malignancy.

The FNAC from breast mass and axillary lymph node were suggestive of ductal carcinoma. Preoperative metastatic work up was performed including computed tomography (CT) scan of the chest, abdomen and pelvis and bone scan. The CT scan of the abdomen showed suspicious

exophytic soft tissue mass measuring 1.9 x 2.3 cm seen in the interpolar region of the right kidney which looks dense and probably enhancing (**figure 3**).



Figure 3: The axial A and the coronal B Computed tomography scan images showing a rounded exophytic soft tissue mass (arrow) measuring 1.9 x 2.3 cm seen in the interpolar region of the right kidney which looks dense and probably enhancing.

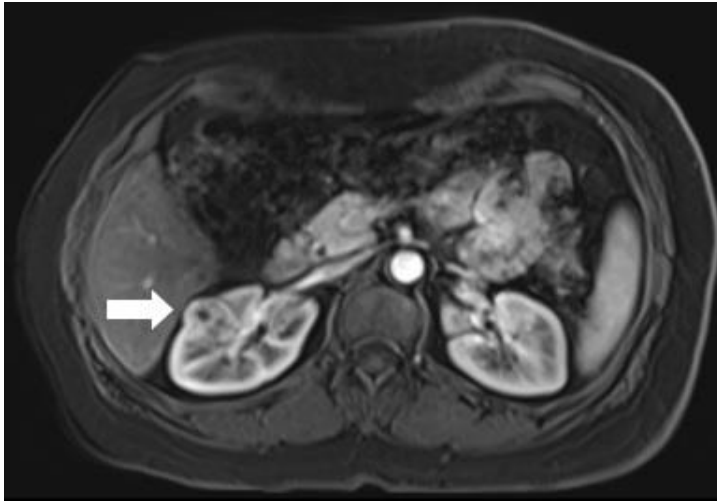


Figure 4: The MRI of the abdomen showing an ill-defined rounded soft tissue mass seen in the interpolar region of the right kidney with solid and cystic components measuring about 2cmx 2.7 cm, showing heterogeneous signal intensity in T1WI and T2WI. It shows enhancement on post contrast images (arrow). No diffusion restriction. There is no extension to the sinus. The renal vein is patent.

In order to evaluate the renal mass, an MRI of the abdomen was done, which re-demonstrated the previously noted ill-defined rounded soft tissue mass seen in the interpolar region of the right kidney with solid and cystic components, showing heterogeneous signal intensity in T1WI and T2WI. It shows enhancement on post contrast images, most likely

Discussion:

Synchronous dual malignancies are defined as two malignant tumors that presents in the same patient simultaneously or within six months of the diagnosis of the primary tumor. According to the literature, the prevalence of occurrence is about 4.5-11.7% [8].

To categorize a case of dual malignancy as synchronous following criteria must be achieved: 1) Both the tumor must be pathologically distinct from each other; 2) There should be definite features of malignancy; and 3) the possibility metastasis must be ruled out [9, 10]. In our case, estrogen receptor analysis was done to rule out the metastasis from breast to kidney after final histopathology report of RCC by immunohistochemically analysis.

Literature reveals that RCC has been associated with other primary malignancies (synchronous and metachronous); like those of bladder [11], prostate [11], stomach [12], colorectal [11], lung [13], endometrium [14], ovary [14], breast [11], nasopharynx [12], lung [6] and hematological malignancies [7].

In a study done by Jiao F et al., eight cases of synchronous breast primaries with RCC was reported with prevalence of 13.1% [15], which was significantly less than the previous studies i.e., 26% which was reported by Christian B et al [16].

In 1996, Piccinini L et al has reported two cases of breast primaries with synchronous RCC [17].

In 2014, Kurlekar UA et al., has reported one case of breast primary with synchronous RCC [7].

representing renal cell carcinoma. The patient was treated by partial right nephrectomy.

Final histopathology report of kidney showed features of clear Renal Cell Carcinoma (RCC), grade 2, tumor size 2 cm. the tumor was unifocal, limited to the kidney, T1aNxMx. Renal parenchymal margin was involved by invasive carcinoma.

Breast specimen showed grade III invasive ductal carcinoma. Tumor size was 2 cm, with tumor free margins, vascular invasion was positive, five out of 14 left axillary lymph nodes showed metastatic deposits from ductal carcinoma of left breast. Hormonal receptor analysis of the breast showed estrogen receptor positivity 90-95%, progesterone receptor positivity was 5% and Her2/neu2 equivocal. In the other hand, within the kidney specimen, there is no hormonal receptor, which ruled out the chances of metastasis to the kidney or vice-versa.

In summary, taking into consideration the above histopathological results along with the other clinical and radiological parameters, we made a final diagnosis of carcinoma left breast pT1N2M0 (stage III a) with synchronous RCC pT1aNxMx (stage I). She was planned for Adriamycin, cyclophosphamide and 5 -fluorouracil based adjuvant chemotherapy for the breast cancer followed by radiotherapy.

Mammogram showing an ill-defined hypoechoic mass with heterogeneous texture seen at 1 o'clock left breast. It measures 1.5 x 1 cm in dimensions corresponding with area of mammographic concern highly suspicious for malignancy. One of the left axillary lymph nodes showed thickened cortex. It measures 1.4 cm with cortical thickness of 0.6 cm (BIRADS V – highly suggestive of malignancy).

The expected factors for multiple malignancies in renal cell carcinoma could be a common carcinogenic exposure such as alcohol or tobacco, germ line mutations of p53 as seen in Li-Fraumeni syndrome, Beckwith-Weidman syndrome or side effects of chemotherapy and radiotherapy [7].

The proposed role of estrogens in cases wherein human renal cell carcinoma is associated with other primary tumors involving steroid-hormone target tissues is tentative and can only be hypothesized [18].

Sato et al., reported that other primaries malignancies at the time of nephrectomy for RCC was an independent prognostic factor for overall survival after the surgery. Furthermore, patients with localized RCC with coexistent cancer had poorer overall survival than those with localized RCC alone [19]. For these reasons, treatment of RCC in patients with multiple primary tumors should be based not only on the stage and operability of the kidney cancer, but also on an evaluation of the disease status of the other synchronous malignant disease; however, because of limited therapeutic and diagnostic option synchronous malignancies whenever found causes a lot of problems to both clinicians and patients [20].

Conclusion:

In conclusion, we represent a case of primary breast carcinoma with incidental RCC. After confirmation of the primary nature of each malignancy and the exclusion of possible metastasis from either site, we conclude to synchronous dual malignancies including breast malignancy with RCC, which is even rare association.

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