



Case Report

Double primary malignancy: Bilateral breast carcinoma in a patient with past history of papillary thyroid carcinoma

Ranjith Kumar. R*

Physician Assistant, Surgical oncology department, Kauvery Cancer Institute, Trichy, Tamil Nadu

*Correspondence

Abstract

Background: Double primary malignancy is defined as the occurrence of two independent primary cancers in the same individual. With improved cancer survival and better diagnostic techniques, the incidence of multiple primary malignancies has increased. We report a case of a 50-year-old female with a past history of papillary thyroid carcinoma who later developed bilateral invasive breast carcinoma. The patient presented with a right breast lump and was diagnosed with bilateral breast malignancy on imaging and biopsy. She received neoadjuvant chemotherapy followed by bilateral modified radical mastectomy with axillary lymph node dissection. Final histopathology revealed invasive carcinoma of no special type (NST) in both breasts with residual cancer burden class II. This case highlights the importance of multidisciplinary management in patients with complex oncological conditions involving multiple primary tumors.

Keywords: Double primary malignancy; Breast cancer; Papillary thyroid carcinoma; Neoadjuvant chemotherapy; Modified radical mastectomy

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1. Introduction

Double primary malignancy refers to the development of two or more independent primary tumors in the same patient. These tumors may occur synchronously (simultaneously) or metachronously (at different time intervals). Improvements in diagnostic imaging, cancer screening, and long-term survival have contributed to increased detection of secondary primary malignancies. Breast cancer is one of the most common malignancies in women, while papillary thyroid carcinoma represents the most frequent type of thyroid cancer. The coexistence of these malignancies in a single patient poses diagnostic and therapeutic challenges. Here we present a case of bilateral breast carcinoma in a patient with a previous history of papillary thyroid carcinoma.

2. Case Presentation

A 50-year-old female presented with a lump in the right breast for the past three months. The lump was associated with pain, redness, swelling, and nipple discharge. The patient was a known case of hypertension and hypothyroidism.

She had a significant past history of papillary thyroid carcinoma diagnosed in 2012. She underwent total thyroidectomy with neck node dissection (pT3N1b) followed by radioactive iodine therapy (30 mCi). In 2016, recurrence of thyroid malignancy was detected and managed with further surgical intervention and radioactive iodine therapy. The patient also had a history of benign surgical procedures including right breast lumpectomy in 2015 and 2016, both of which showed benign histopathology. She had undergone hysterectomy in 2017, which was also benign on histopathological examination.

3. Clinical Examination

On examination, a 3 cm mass was palpated in the right breast without ulceration. Bilateral axillary lymphadenopathy was present.

4. Radiological Findings

4.1. Mammography

- Mammography showed irregular nodular opacities with microcalcifications in both breasts.
- Right breast: irregular nodular opacity with clustered microcalcifications (BIRADS IV C)
- Left breast: irregular nodular opacity with few microcalcifications (BIRADS IV A)
- These findings suggested a high suspicion for malignancy.

5. Histopathological Evaluation

5.1. Right Breast Biopsy

- Core biopsy revealed invasive carcinoma, Grade 2.
- Immunohistochemistry results:
- ER positive.
- PR positive.
- HER2 positive.
- Ki-67 proliferation index: 40%.
- This tumor was classified as triple positive breast cancer.

5.2. Left Breast Biopsy

- Biopsy revealed invasive carcinoma, Grade 3.
- Immunohistochemistry results:
- ER negative.
- PR negative.

- HER2 positive.

This tumor was classified as HER2 positive hormone receptor negative breast cancer.

6. PET-CT Findings

- Initial PET-CT scan revealed:
- Right breast lesion measuring 3.5 × 3 × 2.8 cm (SUV 7.1).
- Left breast lesion measuring 1.5 × 1.4 cm (SUV 9.5).
- Suspicious metastatic lesions were noted in:
- Left supraclavicular lymph node (SUV 6.8).
- Right adrenal gland (SUV 3.5).

7. Treatment

The patient started on neoadjuvant chemotherapy (NACT) consisting of:

- Docetaxel.
- Carboplatin.
- Trastuzumab.

A total of four cycles were administered.

8. Response to Therapy

- Repeating PET-CT scan after chemotherapy showed mixed response.
- Right breast tumor showed partial response with reduction in size and metabolic activity.
- Left breast tumor showed progressive disease with increased SUV (14) and skin infiltration.
- Left supraclavicular lymph node remained stable.

9. Multidisciplinary Team Discussion

The case was discussed in a multidisciplinary tumor board due to disease progression in the left breast.

The consensus management plan included:

- Bilateral modified radical mastectomy.
- Bilateral axillary lymph node dissection.
- Excision of left supraclavicular lymph node.

10. Surgical Management

The patient underwent:

- Bilateral Modified Radical Mastectomy.
- Bilateral axillary lymph node dissection.
- Excision of the left supraclavicular lymph node.

The surgery was completed successfully.

11. Postoperative Course

The postoperative period was uneventful. The patient remained hemodynamically stable with no wound infection. Drain care and wound care were provided, and the patient was discharged on postoperative day three.

12. Final Histopathology

Right Breast	Left Breast
Invasive carcinoma NST, Grade 3	Invasive carcinoma NST, Grade 3
Tumor size: 3 cm	Tumor size: 2.2 cm
No lymphovascular invasion	Lymphovascular invasion present
Lymph nodes: 0/16 positive	Lymph nodes: 0/17 positive
Margins negative	Margins negative
Pathological stage: ypT2N0	Pathological stage: ypT2N0
Residual Cancer Burden: RCB-II	Residual Cancer Burden: RCB-II

13. Discussion

Double primary malignancies involving breast and thyroid cancers have been increasingly reported in recent years. Possible contributing factors include genetic predisposition, hormonal influences, and the effects of previous cancer treatment.

In this case, the patient had a history of papillary thyroid carcinoma followed by the development of bilateral breast carcinoma. The management required a combination of systemic chemotherapy, surgical intervention, and multidisciplinary evaluation.

Early detection and individualized treatment planning are essential for improving outcomes in patients with multiple primary malignancies.

14. Conclusion

This case illustrates the importance of careful evaluation and multidisciplinary management in patients with double primary malignancies. Comprehensive treatment including neoadjuvant chemotherapy and surgical resection can achieve effective disease control even in complex oncological cases.

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