Presentation Number: PS5-06-11

CASE SERIES EXPLORING CHARACTERISTICS AND OUTCOMES OF METACHRONOUS PRIMARY BREAST AND LUNG CANCER IN A DIVERSE COHORT

Keerthana Sureshkumar BS[1], Samuel Kareff MD [2], Richa Dawar MD[2]
University of Miami, Miller School of Medicine [1]; University of Miami [2]

Introduction

- Despite breast and lung cancer being the most common malignancies in women, the occurrence of double primary cancers has been rarely reported in the literature.
- Most existing literature focuses on secondary metastases rather than primary tumors, leaving significant gaps in understanding the risk profile, molecular sequencing, and disease progression in patients who develop both cancers independently of each other.
- It is well-known that an earlier age of diagnosis in patients with breast cancer is linked to more aggressive phenotypes, shedding light on the importance of early screening within this demographic. However, there is a deficiency in the literature related to secondary thoracic malignancies among this high-risk group.
- Understanding these patterns is cruicial to improving our screening strategies and identify patients who may benefit from enhanced surveillance measures.
- This case series aims to characterize the demographic, clinical, and molecular features of patients diagnosed with metachronous primary breast and lung cancers within a diverse, real-world cohort at a major academic cancer center.

Methodology

- This retrospective case series reviewed a cohort of eight patients with double metachronous, primary breast and lung cancers at the Sylvester Cancer Center.
- Data was extracted from EHR and included demographics (age, sex, race, ethnicity, smoking status), cancer characteristics (histology, stage), molecular profiling (hormone receptor expression, mutation status), treatments (surgery, radiation, systemic therapies), and response rates (recurrence, progression, and survival data).

Results

Figure 1: Patient Demographics

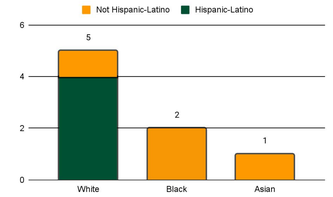


Figure 2: Smoking History

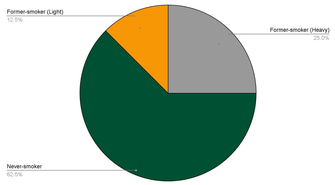


Figure 3: Time Between Diagnoses

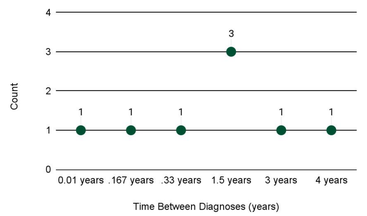


Figure 4: Breast Cancer Molecular Profiling

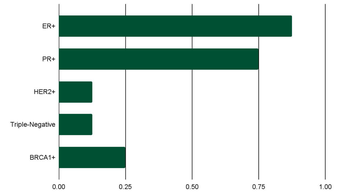


Figure 5: Lung Cancer Molecular Profiling

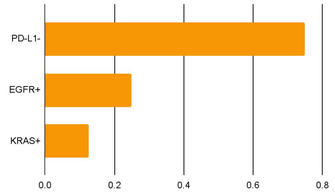


Figure 6: Breast-Lung Cancer Molecular Profiling

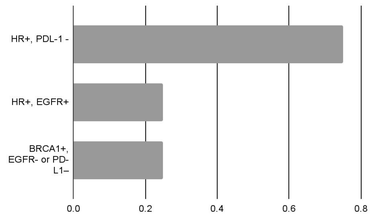


Table 1: Statistical Analyses

	LC and BC diagnosis Before vs After 60 years
Hispanic/Latinx vs Not Hispanic/Latinx	p= 0.157299
	Smoker vs Non Smoker
Hispanic/Latinx vs Not Hispanic/Latinx	p = 0.465209
	Time Between Dx Before vs After 1.9 years
Hispanic/Latinx vs Not Hispanic/Latinx	p = 1

- Median age of patients was 58.5 years.
- The median age of time of diagnosis of breast and lung cancer was 60 years and 62.5 years, respectively.
- The average time between both diagnoses was 1.9 years (range 0.33 - 4 years).
- The majority (87.5%) of genetic profiles indicated a hormone receptor-positive mutation, with 33% of this genetic subset also showing an EGFR mutation.
- 75% of lung tumors were PDL-1 negative.
- Despite no statistical significance between ethnicity and age of diagnosis of breast or lung cancer (p= .157), there was a trend demonstrating Hispanic/Latinx patients being diagnosed at an earlier age for both.
- There was no statistical significance between ethnicity and smoking status (p= .465), or ethnicity and time between diagnoses (p = 1).

Conclusion

- In this diverse, real-world cohort of patients with metachronous and synchronous lung and breast cancers, we noted interesting, hypothesis-generating observations.
- Trends indicated an earlier diagnosis of both breast and lung cancer in Hispanic/Latinx patients, which raises questions about the contribution of genetic predisposition, environmental exposures, or socioeconomic disparities. Though not statistically significant, the consistency of the trend across both cancers suggests that ethnicity-specific risk profiles may require more research, especially in diverse patient populations like those in South Florida.
- 75% of our cohort had a dual diagnosis of breast ductal carcinoma and lung adenocarcinoma, augmenting the possibility of diagnostic confusion between metastatic breast cancer and a true second primary lung tumor, underscoring the need for careful pathologic and molecular confirmation.
- 87.5% of patients had hormone receptor–positive breast cancers, a pattern that may contribute to longer survivorship and extended time at risk for developing a second primary malignancy. 75% of lung tumors were PD-L1 negative, consistent with the biology of lung adenocarcinoma in never-smokers and carrying implications for immunotherapy.
- The presence of EGFR mutations in one-third of the HR+ subset supports the possibility of shared underlying pathways.
- The relatively short average interval of 1.9 years between cancers underscores the need for heightened surveillance.
- Overall, this case series confirms the importance of screening breast cancer patients with low-dose CT for early detection of lung cancer.
- Since double primary breast and lung cancer is rare, molecular profiling with next-generation sequencing could also provide insightful information.

Copies of this poster obtained through Quick Response (QR) Code are for personal use only and may not be reproduced without permission from SABCS® and the author.

Contact Information
Keerthana Sureshkumar, BS
keerthanasuri77@gmail.com