Metastatic lung neuroendocrine tumor mimicking primary breast cancer: --A diagnostic dilemma

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Breast Cancer Remains The 2nd Most Common Cancer in Female
HPI
- 54-year-old Caucasian non-smoker female
- Chief complains of bilateral breast masses felt on self exam
- Also complained of persistent dry cough with spasm like feeling over the past 2 months which was non-responsive to antibiotics, prednisone Tessalon Perles and breathing treatment.

PMHx
- hypothyroidism, GERD, denies prior chest wall radiation therapy

FHx
- No family history of breast cancer; Father: prostate cancer dx at age 68; paternal grandfather: bone cancer; great paternal aunt: cancer unknown; great maternal uncle (#1): skin cancer; great maternal uncle (#2): cancer unknown; paternal second cousin: cancer unknown

OB/Gyn
- age of menarche was 12, last menstrual cycle 1 year ago, had hormonal therapy 1 year ago for 4 months, G4P2, Age of first live birth was 28. Short period of breast feeding for the second child

Lab: ALT 244 (H); AST 90 (H)
Imaging Confirmed Bilateral Breast Mass

Diagnostic Mammogram

Breast MRI
Breast Core Biopsy: Invasive ductal carcinoma

- Immunohistochemistry staining showed ER(-), PR(-), HER-2 (-) Triple negative Breast Ca

Purple: Nuclear
Pink: Cytoplasm
Metastatic work up showed lymph node, Lung, Liver Involvement

CT Chest/Abd W CONTRAST

Mediastinum Lymph Node

Lung Nodules

Liver

PET scan

No brain or bone metastasis
Question?

Primary breast tumor with metastasis vs. Tumor metastasated to breast
Introduction

Case Report

Discussion

Conclusion

Triple-negative breast cancer metastasis

• Evidences against primary breast cancer
  • Bilateral breast masses
  • No axillary adenopathy bilaterally
  • Atypical pathology presentation of invasive ductal carcinoma
  • Triple-negative breast cancer
  • Other organ involvement

• Solution
  • Biopsy and immunostain

Ahmet Cinkaya¹, Mustafa Akin², Adem Sengul³ Evaluation of treatment outcomes of triple-negative breast cancer
Immunohistochemistry of liver biopsy: ER(-), PR(-) and HER-2 (-)

Blue: negative. Brown: Positive
Immunohistochemistry of liver biopsy: (+) the lung and neuroendocrine carcinoma markers

Chromogranin

TTF-1

Synaptophysin

Blue: negative. Brown: Positive
Immunohistochemistry of liver biopsy:

(-) breast carcinoma markers

**Mamoglobin**

**GATA-3**

Blue: negative.  Brown: Positive
Pathology revised the diagnosis: Low-grade neuroendocrine tumor strongly favor a pulmonary origin and effectively exclude primary breast carcinoma.

**Liver**

**Breast**

**Lymph node**

- Immunohistochemistry staining of breast core biopsy showed synaptophysin (+), chromagranin (+) and nuclear TTF-1 (+), but the breast carcinoma marker: mamoglobin (-), nuclear GATA-3 (-)

Purple: Nuclear
Pink: Cytoplasm
Carcinoid syndrome: cutaneous flushing, diarrhea and bronchospasm (most seen in GI involvement)

Low-grade lung NETs (well-differentiated), slowly-growing neoplasms that rarely metastasize to extra thoracic structures

High-grade lung NETs (poorly-differentiated), as typified by small cell lung cancer and large cell neuroendocrine carcinoma, which behave aggressively, with rapid tumor growth and early distant dissemination

Our patient: pathology: low grade; clinically: high-grade; therefore treated with chemotherapy as high-grade NETs
Screening using Breast MRI for hyperdense breast tissue might prompt early tumor detection.
Features of the breast mass warrants further investigation

Metastatic tumor to breast should be considered in at least one of the following scenarios:

• Single or multiple well-circumscribed lesions of the breast that lack an in situ component and that are accompanied by distant metastases but negative axillary lymph nodes
• Breast tumors that are triple negative yet not high-grade
• Breast tumors presenting as stage 4 disease and/or having an unusually aggressive clinical course on standard breast therapy

Finally, Immunohistochemistry plays essential role in identifying primary tumor
• Accurate and timely diagnosis between primary breast carcinoma and metastatic carcinoma to the breast is mandatory to guide management.

• Think outside of the box to broaden differential diagnosis

• Screening using Breast MRI for hyperdense breast tissue might prompt early tumor detection
References


Thank you!

.... Questions?