Plain Film Findings of Breast Abnormalities and Correlation with CT and Mammography Evaluation

Oghale Obaro-Best MD*[1]; Sonia Hur MD [1]; Mirza Baig MD [1]; Daniel Edelman MD [1]; Brian Tung MD [1]; Perry Gerard, MD MBA FACR [1]; Jared Meshekow MD MPH [2]

1: Department of Radiology; Westchester Medical Center 2: Department of Radiology, Temple Health

OBJECTIVE

- To understand the role of plain film radiography in detecting breast abnormalities.
- To discuss interpretation of plain film findings and their clinical significance.
- To review correlation between plain film and other modalities such CT and tomosynthesis in breast imaging.

METHODS/MATERIALS

Breast abnormalities are a significant concern in women's health although dedicated diagnostic methods such as tomosynthesis and tailored MRI are often performed and important findings can be made on plain film which is an underappreciated modality in breast imaging. We shed light on the value of plain film radiography in detecting breast abnormalities and provide medical student, residents, and attending radiologists with a comprehensive overview of breast findings that can be made radiograph, CT and mammographic correlates are provided. CXR with abnormal breast soft tissue lesions were correlated to their respective CT/Mammograms.

RESULTS

Plain film radiography, traditionally considered a less sensitive tool for breast imaging, can provide crucial information in certain clinical scenarios and/or serve as an early warning in specific pathologic states. We present examples where breast abnormalities can be detected by breast radiology including breast asymmetry, calcifications, or masses. We highlight the role of plain film radiography in evaluating breast implants, foreign bodies, and post-surgical changes. Examples with correlation between plain films, and other modalities such as mammography, and CT scans are provided.

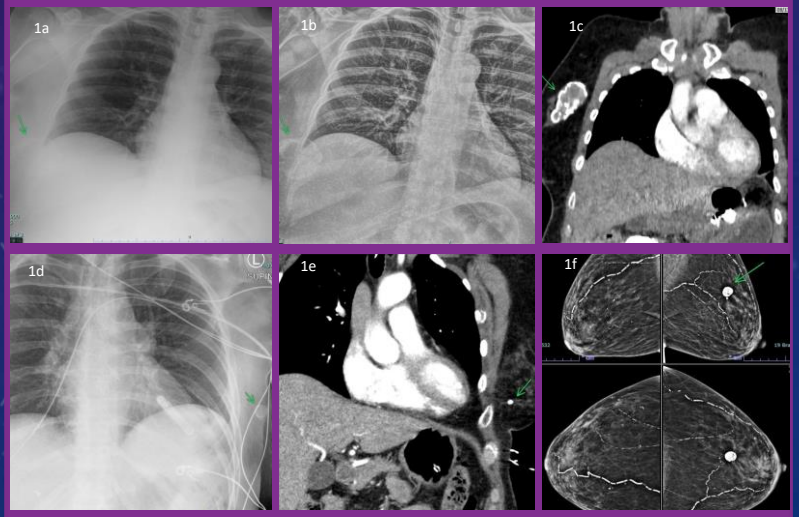

Fig 1a-c: lucent rounded hyperdensity in the right chest identified on plain film, correlating to fat necrosis on subsequent CT. Calcified right breast implant.
Fig 1d-f: Small, rounded hyperdensity in the left lateral chest wall, corresponding to breast calcification on CT and Mammography. BIRADS 2 Grouped microcaifications

CONCLUSION

Plain films represent an underappreciated method for visualization of breast pathology. Evaluation of breast tissue on plain film can provide important clinical information and provide diagnostic clues important to the patient. This project highlights conditions that can be detected on plain and provides examples and correlation by other modalities such as CT and tomosynthesis. By learning to recognize and interpret plain film findings for breast abnormalities, trainees and veterans alike can optimize their diagnostic capabilities and provide valuable patient information

REFERENCES

1. Iranmakani, S., Mortezazadeh, T., Sajadian, F. *et al.* A review of various modalities in breast imaging: technical aspects and clinical outcomes. *Egypt J Radiol Nucl Med* **51**, 57 (2020). https://doi.org/10.1186/s43055-020-00175-5
2. Matsumoto RAEK, Catani JH, Campoy ML, Oliveira AM, de Barros N. Radiological findings of breast involvement in benign and malignant systemic diseases. Radiol Bras. 2018 Sep-Oct;51(5):328-333. doi: 10.1590/0100-3984.2016.0125. PMID: 30369661; PMCID: PMC6198842.
3. Houssami, N., Hunter, K. The epidemiology, radiology and biological characteristics of interval breast cancers in population mammography screening. *npj Breast Cancer* **3**, 12 (2017). https://doi.org/10.1038/s41523-017-0014-x

ACKNOWLEDGEMENTS/CONTACT

WMC Department of Radiology
TEMPLE Health Department of Radiology