

Himmelfarb Health Sciences Library, The George Washington University

Health Sciences Research Commons

URGENT Matters

School of Medicine and Health Sciences

9-15-2023

Pitfalls of Breast Imaging in the Emergency Department

Aneka Khilnani

Akansha Mohan

Follow this and additional works at: https://hsrc.himmelfarb.gwu.edu/smhs_URGENT_Matters



Part of the [Medicine and Health Sciences Commons](#)

Pitfalls of Breast Imaging in the Emergency Department

Aneka Khilnani, M.S., Akansha Mohan, MD

09/15/2023

While true emergencies involving the breast are rare (Moseley et al., 2018), the fact that an estimated 297,790 women will be diagnosed with invasive breast cancer in 2023 alone (Cancer Facts & Figures, 2023) increases the sense of urgency, concern, and anxiety for patients presenting with any breast-related concerns. A variety of breast-related complaints may present to the emergency department, most commonly breast pain, breast mass, nipple discharge, infection, or postoperative complications (Hines, Leibman, and David, 2007). While mammography is the most frequently used modality for breast imaging, ultrasound is more readily available in emergency settings and better tolerated by patients presenting with unsettling breast symptoms (Bosma et al., 2015). However, given the limited number of radiologists trained in breast imaging working in the emergency department, particularly during overnight and weekend shifts, questions arise about how effective this modality can be in detecting breast cancer (Bosma et al., 2015).

Common diagnoses seen in the emergency department include: abscess, cellulitis, mastitis, breast mass, breast pain, lipoma, breast wound, and fibroadenoma (Bosma et al., 2015). However, patients presenting to the emergency department with breast symptoms are often worried that the underlying cause is a malignant condition. Although most breast concerns that present to the emergency department have benign and easily treatable causes, clinicians should always consider breast cancer in their differential diagnosis, given that breast cancer remains the most commonly diagnosed cancer among women and the second leading cause of cancer death

in women in the United States (Giaquinto et al., 2022). Unfortunately, emergency medicine trained physicians do not receive adequate training to evaluate and diagnose patients who may be suffering from breast cancer.

According to a 2018 diagnostics study that sought to determine the efficacy of ultrasonography performed by emergency department clinicians in the clinical management of breast complaints, emergency clinicians only identified breast abscesses in 26% of the cases and failed to diagnose six out of 29 (21%) cancers (Moseley et al., 2018). When these same imaging studies were forwarded to trained radiologists, the interpreting radiologist concluded that 40% were incomplete. The researchers surmised that suboptimal reads on acute breast ultrasounds occur in emergency departments due to a lack of breast-certified radiologists on staff and the wide variability of ultrasound experience amongst emergency clinicians, particularly during nights and weekends (Moseley et al., 2018). Thus, the researchers advocate for a radiologist trained in breast imaging to remain on-call during off-peak hours as an effective way to identify which women need expeditious intervention. However, this additional resource is likely cost prohibitive in most systems.

This same study went on to suggest specific ways to optimize breast ultrasound in the emergency setting (Moseley et al., 2018). First, if a patient only has breast pain and lacks other symptoms suggestive of a breast abscess such as a lump, swelling, fever, or generalized malaise, the patient's pain should be treated, and a follow-up plan should be made for a comprehensive examination in a dedicated breast imaging center, in an appropriate time frame. Next, the authors recommend a clinical care pathway that can be used to risk stratify patients with breast complaints (Moseley et al., 2018). Factors such as smoking history, diabetes, drainage, redness, fluctuance, and soft tissue hardening can guide the decision about the necessity of an emergent

breast ultrasound or referral to outpatient breast imaging for women who are at low risk of abscess (Moseley et al., 2018). This risk stratifying strategy can help patients receive the service that would best address their problem. In addition, this could help reduce the utilization of radiology department services during critical hours. Having a more targeted approach to identifying which patients need breast ultrasounds in the emergency department could also expedite service for patients with emergent needs.

It is well known that breast cancer, when found early, prior to metastatic spread, is easier to treat successfully. Thus, appropriate follow-up for acute complaints that may constitute an underlying malignancy is essential for optimal patient care. Using this method of risk stratification can help prevent the possibility that a woman who receives a falsely negative result in the emergency department will forgo follow-up imaging in a more appropriate clinical environment. A 2016 study in Emergency Radiology sought to report the management, clinical outcomes, and follow-up rates of patients evaluated for breast abscesses in emergency departments (Porembka et al., 2019). They found that of the women imaged for breast concerns in the emergency department, only 63% went on to receive follow-up imaging in an outpatient clinic. While inflammatory breast carcinoma remains a rare condition, it may mimic inflammatory conditions of the breast such as mastitis and breast abscess. Short interval clinical follow-up (7-14 days) after the initiation of antibiotic therapy is usually recommended, although follow-up intervals can vary based on clinical response (Porembka et al., 2019). Given that inflammatory breast symptoms need to be recognized as a possible early manifestation of breast cancer, the researchers suggest that additional clinician and patient education is warranted, and that emergency clinicians and radiologists should develop strategies to increase patient adherence to follow-up for inflammatory breast symptoms (Porembka et al., 2019).

In the United States, compensation for imaging services provided by radiologists is shifting from volume-based reimbursement to value-based reimbursement (Burwell, 2015). In response to this shift, the American College of Radiology is advocating for an “Imagining 3.0” cultural transformation, whereby radiologists demonstrate value beyond image interpretation to patients, referring clinicians, and their institutions (Ellenbogen, 2013). The performance of emergency breast ultrasonography aligns with this proposed culture change.

In conclusion, excessive utilization, suboptimal studies, and misdiagnosis due to a lack of expert breast radiologists, particularly during nights and weekends in the emergency department, have risks associated with breast ultrasonography use in the emergency department. Risk stratifying patients with breast concerns could alleviate these risks and aid in reduction of misdiagnosis in the emergency department. Follow-up is extremely important for breast complaints presenting in the emergency department to rule out malignancy, and emergency clinicians and radiologists should target follow-up metrics as an area of improvement.

The authors have no conflicts to report.

References:

1. American Cancer Society. Cancer Facts & Figures 2023. Atlanta: American Cancer Society; 2023.
2. Burwell, S. M. (2015). Setting value-based payment goals—HHS efforts to improve US health care. *N Engl J Med*, 372(10), 897-899.
3. Bosma, M. S., Morden, K. L., Klein, K. A., Neal, C. H., Knoepp, U. S., & Patterson, S. K. (2016). Breast imaging after dark: patient outcomes following evaluation for breast abscess in the emergency department after hours. *Emergency radiology*, 23, 29-33.
4. Ellenbogen, P. H. (2013). Imaging 3.0: what is it?. *Journal of the American college of Radiology*, 10(4), 229.
5. Giaquinto, A. N., Sung, H., Miller, K. D., Kramer, J. L., Newman, L. A., Minihan, A., ... & Siegel, R. L. (2022). Breast cancer statistics, 2022. *CA: a cancer journal for clinicians*, 72(6), 524-541.
6. Hines, N., Leibman, A. J., & David, M. (2007). Breast problems presenting in the emergency room. *Emergency radiology*, 14, 23-28.
7. Moseley, T. W., Stanley, A., Wei, W., & Parikh, J. R. (2018). Impact on clinical

management of after-hours emergent or urgent breast ultrasonography in patients with clinically suspected breast abscesses. *Diagnostics*, 8(1), 17.

8. Porembka, J. H., Compton, L., Omar, L., Sharma, P., Clark, H., Ahn, R., Ganti, R., Xi, Y., Metzger, J., & Leyendecker, J. R. (2019). Breast ultrasound utilization in a safety net emergency department. *Emergency radiology*, 26(2), 123–131.
<https://doi.org/10.1007/s10140-018-1651-6>