Challenges of Health Care Dynamics and the Role of Breast Imager as an Astute Clinician

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ABSTRACT

Breast imager plays an important role in the screening and detection of breast cancer. Here, we described a case to emphasize the multifaceted role of breast imager in the current healthcare system. With the growing accessibility of various imaging studies, radiologists are experiencing an increased imaging volume, where value is often measured by quantity rather than clinical impact. It is crucial to shift the emphasis to personalized patient care. In addition, the contribution of breast imager to a dynamic workflow is paramount, particularly in identifying and responding to unexpected findings. The timely referral to the emergency department with appropriate urgent imaging recommendations highlights the prompt and collaborative approach for patient care. Although seemingly straightforward, coordinating care across different specialties demands a clear grasp of urgency and effective communication.

CASE REPORT

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Breast radiologist plays a pivotal role in screening and early detection of breast cancer [1]. Although their work as diagnosticians is well recognized in the medical community, their role as an astute clinician is underestimated. Through this essay, we would like to illustrate a case that emphasizes the multifaceted role of breast radiologists within healthcare dynamics.

CASE PRESENTATION

A 54-year-old female with a six-month history of a left breast mass presented to the emergency department (ED) for progressively worsening back pain for three months. Initially managed with ibuprofen and hot packs, her pain escalated, rendering her immobile and reliant on a wheelchair at home. The pain was non-radiating, localized to the mid lumbar spine, exacerbated with movement, and was without accompanying symptoms like weakness, numbness, paresthesia, saddle anesthesia, or urinary incontinence. Her vital signs were within normal limits. Physical examination did not reveal any focal neurological signs. Differentials included muscle strain, herniated discs, radiculopathy, aortic aneurysm rupture, pyelonephritis, and nephrolithiasis. Urinalysis was unremarkable. Computed Tomography of the spine was offered but declined by the patient as she was concerned that she may not be able to lie flat for the imaging and decided to postpone the imaging to a later time. Lumbar spine radiographs were not performed by the ED, citing a lack of bony tenderness and low sensitivity of the radiographs for soft tissue pathologies. Subsequently, the patient was discharged with pain medications.

She returned to the ED ten days later with persistent pain despite being on pain medications, and there was no significant change in the physical exam. The ED physician was concerned for muscle strain versus disc herniation and therefore suggested Magnetic Resonance Imaging (MRI) of the spine which could not be performed in the ED setting due to the lack of red flag symptoms on the physical exam. The patient was instructed to follow up with a primary care physician (PCP) for an outpatient MRI.

Seven days after the second ED visit, the patient had an appointment with her PCP, at which time radiographs and MRI of the lumbar spine were finally ordered. However, an outpatient MRI of the lumbar spine was hindered by a delay in getting insurance prior authorization. At that visit, the patient also reported the left breast mass to her PCP, which she had felt for six months. The PCP ordered a diagnostic mammogram and ultrasound of the left breast for further evaluation. Two weeks after the PCP appointment, the patient presented to the breast imaging clinic in a wheelchair for a bilateral diagnostic mammogram and targeted ultrasound (US) of the left breast. Diagnostic work-up (Figure 1A-1D) revealed a highly suspicious 3.4 cm anterior left breast mass, with associated skin thickening and nipple inversion and multiple suspicious left axillary lymph nodes. The assessment was BIRADS (Breast Imaging

Reporting and Data System) category 5, highly suggestive of malignancy, and US-guided biopsy was recommended. During diagnostic breast imaging, positioning the patient was extremely challenging due to her being wheelchair bound and in excruciating pain, prompting the breast radiologist to inquire further about the history of back pain and the reason for delay in spinal imaging. Given the worrisome findings on breast imaging and the insurance-related MRI delays, the breast radiologists arranged with the radiography technologists to obtain emergent same day lumbar spine radiograph and notified the neuroradiologists about the history and the urgent need of a read given the high suspicion for metastasis and pathologic fracture. The lumbar spine radiograph (Figure 1E) depicted compression fractures of multiple vertebrae (labeled T for thoracic vertebra, L for lumbar vertebra, followed by the number of the individual vertebra) including T11, T12, L1 and L2, prompting immediate referral to the emergency department for an emergent MRI of the lumbar spine with and without IV contrast for further evaluation. The PCP was also immediately notified of the critical findings.

The patient did not comply with the ED referral and instead returned to her PCP after five days, with no change in her clinical picture. Subsequent lab analyses showed leukocytosis of 17000/mm^3, and hypercalcemia of 15 mg/dL. Consequently, the patient was directed back to the ED and finally admitted to the hospital for comprehensive evaluation and treatment of the presumed metastatic breast cancer. A bedside biopsy of the breast mass demonstrated moderately differentiated estrogen receptor (ER)-positive, progesterone receptor (PR)-positive, human epidermal growth factor receptor 2 (HER2)-negative invasive ductal carcinoma. Subsequent MRI of the thoracolumbar spine (Figure 2A-2C) showed numerous vertebral metastases as well as epidural involvement with moderate spinal canal narrowing at the level of L1. Next, Positron Imaging Tomography/Computed Tomography (PET/CT) depicted widespread bony metastases in spine and pelvis (Figure 2D). Brain MRI was negative for intracranial lesions. Following the imaging, the patient received a five-day therapeutic radiation therapy. Currently, she is under the care of oncology for outpatient chemotherapy.

DISCUSSION

This case underscores several workflow-related issues in healthcare and its interplay with patient factors and unique limitations. Additionally, it highlights the pivotal role of breast radiologists in the current healthcare system, which includes not only giving a quality read on the imaging performed, but also putting it in perspective with the patient's clinical picture and recommending the next steps best suited for the patients. With the growing accessibility of various imaging studies, radiologists are experiencing an increased imaging volume, where value is often measured by quantity rather than clinical impact [2]. It is crucial to shift the emphasis to personalized patient care. This report uniquely reinforces the integral role of breast radiologists as clinicians and patient advocates.

Our case highlights the profound repercussions of care delays experienced by our patients (Figure 3). Despite multiple visits to both the ED and outpatient settings, the patient's symptoms were inadequately addressed with delays in obtaining spinal imaging. The progressive and chronic nature of the patient's back pain leading to wheelchair dependence, despite conservative therapy, constitutes a red flag. This concern is heightened by the patient's post-menopausal age and the presence of palpable breast mass, raising the possibility of breast cancer with metastases and compression fracture to the top of the differential diagnosis, prompting immediate imaging as outlined in the American College of Radiology appropriateness criteria [3].

The delay in insurance prior authorization (PA) significantly impacted patient care in our case. It is a process where a physician obtains approval from the patient's insurer for the tests, procedures, or medications. The primary intention of PA is to curtail unnecessary tests and treatments [4-6]. In 2021, the United States has a health expenditure of $200 billion on cancer care [7]. The PA works in a way to standardize the quality of treatment while upholding the cost-efficiency and balancing the health economy. However, the execution of PA has frequently led to delays in appropriate care [7]. In a recent survey by American Medical Association, 91% of physicians reported delay in care due to delay in PA and around 75% of the patients abandoned treatment due to the obstacles associated with the process [8]. In addition, it increases the clinician burnout due to excessive paperwork [4]. Enhancing coordination among stakeholders and refining workflows may aid in simplifying the clinician workflow and timely approval of the prior authorization. In 2022, United States House of Representatives enacted a bill "Improving seniors timely access to care act" which emphasizes the electronic PA to expedite the approval [7]. Having dedicated staff members at primary care clinics to triage and address PAs can prevent delays in care.

Furthermore, the health care disparities rooted in socioeconomic status and insurance type significantly impact the quality of care. Our case distinctly highlights how these disparities contributed to adverse outcomes for our patient. Care of adults over 50, especially those with multiple medical problems is a complex issue and most often the PCP and the ED are held responsible for managing everything. However, looking at system issues and finding solutions will help prevent delays in care. One such strategy can be to have a team in place to follow up on patients who have had two or more ED visits within a period of two months, enquiring on their unique issues, ensuring that they have been able to keep up with follow up appointments and the recommended tests and referrals.

The contribution of breast radiologist to a dynamic workflow is paramount, particularly in identifying and responding to unexpected findings. As illustrated in this case, a routine screening mammogram became a gateway to uncover a previously undiscovered spinal fracture, emphasizing the breast radiologist's role in detecting and addressing non-breast

pathologies. The timely referral to the emergency department with appropriate urgent imaging recommendations highlights the prompt and collaborative approach for patient care. This instance exemplifies the adaptability and preparedness of breast radiologists to address an unexpected finding and their proactive role in assessing patient as a whole and not just a reactive approach to breast findings. In addition, it is important to highlight the other crucial roles of a breast radiologist in the current healthcare system. In most institutions, breast radiologists also participate in clinical decision making through multidisciplinary discussions with surgery, pathology and oncology. The role of radiologist as a public health provider is well demonstrated through cancer screening and image interpretation. However, in the current interconnected health care model, radiologists also make a difference in patient care by increasing awareness among the clinicians about the timeliness and cost effectiveness of various imaging modalities and often by answering the critical question "what is the next best step for the patient". By being a patient advocate, and by focusing on patient safety, quality improvement, and information technology, radiologists can continue to contribute immensely to the health care system [9].

Although seemingly straightforward, coordinating care across different specialties demands a clear grasp of urgency and effective communication. In addition, empathetic patient communication is extremely important, so the patient is actively involved in their treatment decisions. Breast radiologists have ample patient contact while performing hands-on ultrasound scans, obtaining consent during procedures, and discussing the anticipated test results [10]. This unique opportunity for patient interaction is a privilege to the breast imaging subspecialty. During the conversations, the breast radiologist should focus on obtaining relevant history, explaining the patient's clinical condition to their level of understanding, and empowering them in selecting the appropriate treatment options [11]. Effective communication not only fosters patient satisfaction but also enhances the likelihood of consistent follow-ups [12]. Training institutions should provide opportunities for young radiologists to observe and practice these communication skills, thereby bolstering their confidence [13,14].

Breast radiologists are deeply embedded as an integral part of the healthcare care team, extending beyond mere image interpretation. They remain a consistent presence for the patient throughout their treatment journey and play a crucial role in the multidisciplinary tumor board, in collaboration with surgeons, oncologists, radiation oncologists and pathologists. In our case, the identification of pathologic fracture secondary to breast metastases triggered a coordinated cascade of patient care in collaboration with medical and radiation oncologists ensuring optimum patient care.

CONCLUSION

In summary, our case report uniquely underscores the integral role of breast radiologists as clinicians and patient advocates, highlighting their multifaceted role beyond diagnostic work in a dynamic healthcare landscape. Furthermore, breast radiologists proactively engage in identifying unforeseen pathologies, ensuring holistic patient care. Additionally, it is essential to acknowledge the impact of healthcare disparities, advocating for their mitigation, to enhance healthcare quality.

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Patient Consent Statement

Written Informed Consent is obtained from the patient. We will provide the copies should the Journal request.

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FIGURES

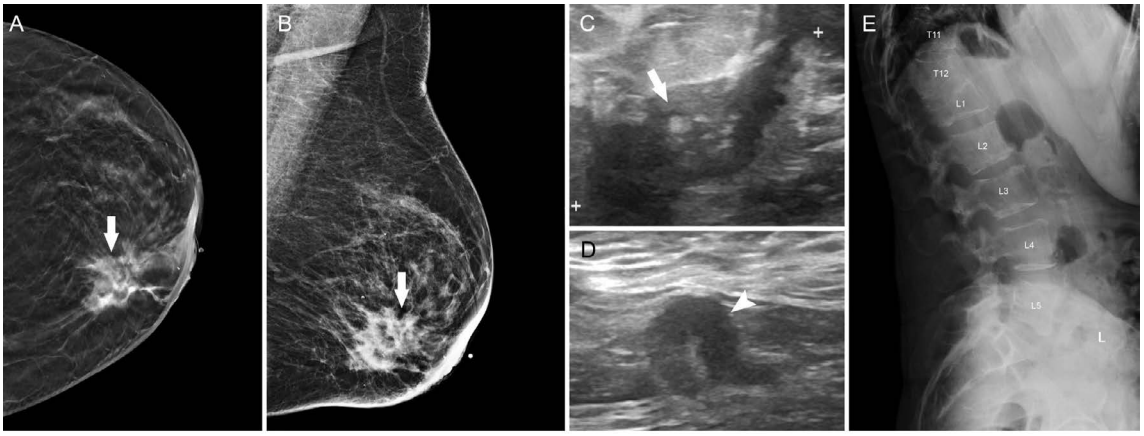

Figure 1: Diagnostic mammogram of the left breast with cranio-caudal (A) and mediolateral oblique (B) views demonstrating a large 3.4 cm anterior mass (arrows). Ultrasound images (C, D) demonstrating the suspicious left breast mass (arrow) and cortically thickened left axillary lymph node (arrowhead). A same day lumbar spine radiograph lateral view (E) showing multiple compression deformities of thoracolumbar vertebrae. Vertebral bodies are labeled for better anatomical orientation.

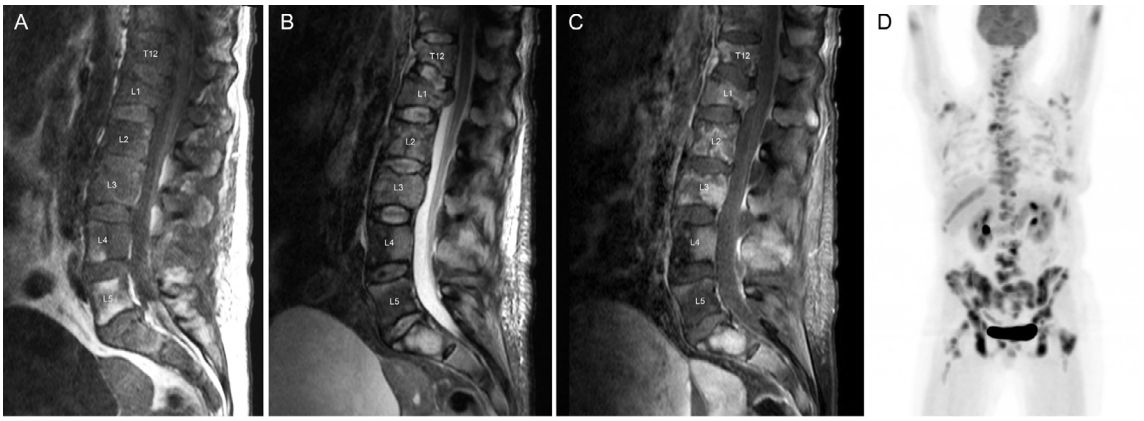

Figure 2: T1 weighted pre-contrast (A), Short Tau Inversion Recovery (STIR) (B) and T1 weighted post-contrast (C) MRI images demonstrating multiple compression fractures and vertebral metastases. There is retropulsion of bony fragments into the spinal canal at the level of L1. A PET/CT maximum intensity projection image (D) shows widespread osseous metastatic disease.

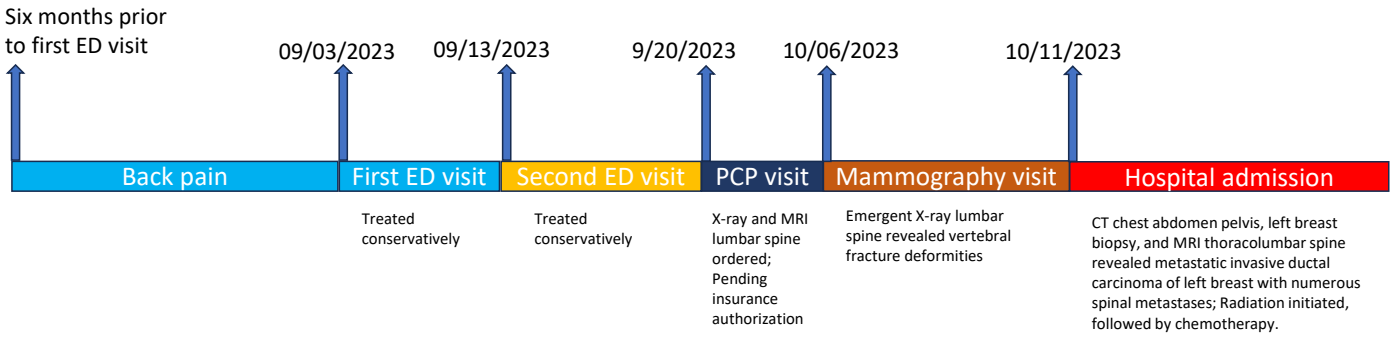

Figure 3: Timeline of patient's medical care

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