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Case Report

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Rapid Growing Breast Cancer: Timely Finding in a Routine Mammogram

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Abstract

Background: This case report details the timely finding, and thus life-saving intervention, of rapid-growing breast cancer noted in an annual mammogram. The importance of communication and follow-up were instrumental in the successful treatment for this patient. ***Discussion:*** Patient outcomes for individuals diagnosed with breast cancer are enhanced with early detection and treatment. Additionally, the rapport developed and shared between the initial interaction with Radiology Technicians and Interventional Radiologists are crucial in establishing a culture of care and competence leading to effective treatment options, and eventually, cancer eradication. ***Conclusion:*** Although mammograms are routine practices of patient care for the Radiology Technician, the ability to foster patient comfort through communication is essential in the development of patient/health care provider trust. Additional interactions throughout breast cancer treatment build on this initial interaction.

Keywords: ***breast cancer, mammogram, communication, treatment, radiotherapy***

Introduction

The mammary glands are functional reproductive organs of the female breasts, and they undergo several developmental changes throughout the lifecycle. Hormones drive much of this change which is relative across time in terms of size, function and tissue density. These developmental changes are important for understanding breast cancer detection and the treatment thereof.

Excluding skin cancer, breast cancer is the most common cancer in women both in the United States and worldwide. Only about 1% of breast cancer cases will occur in men [1,2]. Disease detected in early stages demonstrates better prognosis and survival rates. Mammography has been the gold standard for breast cancer screening with some debate surrounding the ideal screening intervals and age groups. Treatment advances in surgery, radiotherapy and systemic therapies have helped improve breast cancer treatment.

Methods

Epidemiology

It is estimated that in the United States in 2022, there will be 287,850 new cases of invasive breast cancer and 51,400 cases of in situ carcinoma. Also in 2022, there are 43,350 expected deaths from breast cancer in the United States. This translates to an annual breast cancer incidence rate of 128.3 per 100,000 people with a death rate of 19.6 per 100,000 people. The lifetime likelihood of a woman developing breast cancer is about 1 in 8 or 12.9% [3].

The importance of screening and early-stage detection is very important whereas disease diagnosed in a localized stage (confined to primary site) has a relative five-year survival rate of 99.1%. Breast cancer cases which are diagnosed in a regional stage have five-year survival rates of 86.1% while a metastatic stage diagnosis results in 30.0% five-year survival. Currently in the United States, about 64% of breast cancer cases are diagnosed in localized staging, 29% are diagnosed at regional, 6% in metastatic and 2% are diagnosed in an unknown stage. Cumulatively, this results in an overall five-year relative survival rate of 90.6% [1].

Risk factors for breast cancer include age, whereas increased age results in increased risk for breast cancer incidence. The median age at the time of diagnosis is 63 years. Around 80% of breast cancer diagnosis was in patients over 50 years of age in the United States in 2020 [4]. An obvious risk factor for breast cancer risk is sexual orientation, whereas females account for about 99% of diagnosis. Only about 2,710 new cases were diagnosed, and 530 deaths occurred in 2022 in the United States. The lifetime risk for male breast cancer development is about 1 in 833 [5].

Racially, non-Hispanic white women have the highest incidence of breast cancer with about 137.6 per 100,000 people. Non-Hispanic black women have the next highest incidence at 129.6 followed by non-Hispanic Asians/Pacific Islanders (106.9), non-Hispanic Native Americans (11.3) and Hispanics (99.9) per 100,000 people. The death rate is highest for non-Hispanic black women (27.6), followed by non-Hispanic whites (19.7), non-Hispanic Native Americans (17.6), Hispanics (13.7) then non-Hispanic Asian/Pacific Islander at 11.7 per 100,000 people [1].

Case Description

A 51-year-old woman presented for mammographic screening. Although routine, the patient was noticeably nervous and apprehensive about the procedure since it had been 4.5 years since her last screening mammogram. The radiologic technologist performed the scan competently, focusing communication skills on minimizing the anxiety of the patient, explaining each facet of the procedure, and frequently ensuring the patient's well-being and comfort level.

The result of this screening mammogram revealed a 2 cm heterogeneous breast density (see image below), which was shared

with the patient by the radiologist. The radiologist concluded in the screening report that the patient should undergo further evaluation via either diagnostic mammography or breast sonography. A breast ultrasound was performed the same day following the mammographic screening interpretation and recommendation and it concluded that there was an irregular hypoechoic mass at the 9 o'clock position 6 cm from the nipple. The Radiologist shared these results with the patient via phone, with a plan to refer the patient to a cancer treatment center with an on-site breast surgeon and oncologist.

Plan of care for this patient prompted a breast biopsy within seven days of the second mammogram. The breast biopsy, relayed by the patient, was extremely stressful but was completed without anxiety medications. The patient attributed her ability to remain calm through the procedure to the communication skills of the interventional radiologist; this professional fully explained the procedure in real time in terms the patient could understand and consistently assessed the patient's comfort level. Biopsy results indicated a 2.1 cm cyst in the right breast, estrogen receptor positive and HER2 receptor positive.

Within one week of diagnosis, the patient underwent a lumpectomy as an outpatient. Description of this event was described as extremely traumatic for the patient. Due to the acute care setting layout, the patient initially reported to radiology for dye injection and wire placement. Afterwards, the patient was transferred via family member and wheelchair, to the same day surgery suite. The lumpectomy included sentimental lymph node removal as well.

Upon healing of the surgical site, a port was inserted for chemotherapy treatment. The patient completed six rounds of chemotherapy of docetaxel (Taxotere) and Carboplatin, with an additional 17 rounds of Herceptin. Typical adverse effects of nausea, fatigue, and hair loss were noted. Post chemotherapy, the patient underwent radiation five days a week for 21 treatment sessions. Since the completion of treatment, the patient has had the port removed, takes Letrozole daily, and continues appointments with the radiologist, oncologist, and breast surgeon every six months. Upon completion of five years post-treatment, medical visits will transition to annually, with the addition of bone density testing.

Teaching Implications for the Patient r/t diagnostic procedures

In Western civilization, female breasts have long been sexualized, to the point where many women do not feel comfortable breast feeding in public [6]. This sexualization of the female breast potentially impacts personal behaviors that range from perception of self to the ability to perform monthly breast self-examination [7]. Although the physiology of the female breast is designed for lactation, an individual's perception of femineity may also be linked to their personal views of the breast. Understanding each woman's feelings towards and acceptance of their breasts play a distinct role in the teaching implications associated with the female breast, breast self-exam and individual perception post-cancer treatment.

Ideally, familiarizing oneself with the breast should begin a lifelong habit of breast awareness, and is useful when combined with regular physicals performed by a health care practitioner and mammography. Breast examination may or may not include manual manipulation, but should, at a minimum, include visualization of the breasts with hands on hips and again with hands over the head. The individual should be familiar with the usual size and shape of the breast, as well as color patterns connected with the areola. Upon examination, the individual should examine for dimpling or puckering under the skin, discoloration, and or changes in nipple appearance [8]. Familiarity with what's normal for the individual's breast will help them identify when something is abnormal.

Current recommendations from the United States Preventative Services Task Force (USPSTF) recommended bi-annual mammograms for women between 50 and 74 years of age with average risk factors. If an individual has an increased risk of breast cancer, earnest conversation with the primary health care provider should address the frequency of mammograms [9]. Some risk factors that may necessitate more frequent mammograms or additional diagnoses options include aging, genetic disposition, early initial menses prior to 12, dense breast tissue, or personal or familial history [10]. Typically, positive identification of breast cancer requires advanced diagnostic measures to possibly include ultrasound, diagnostic mammogram, breast magnetic resonance imaging, and/or biopsy [11]. Upon positive identification of breast cancer, patient teaching is supportive of treatment plans.

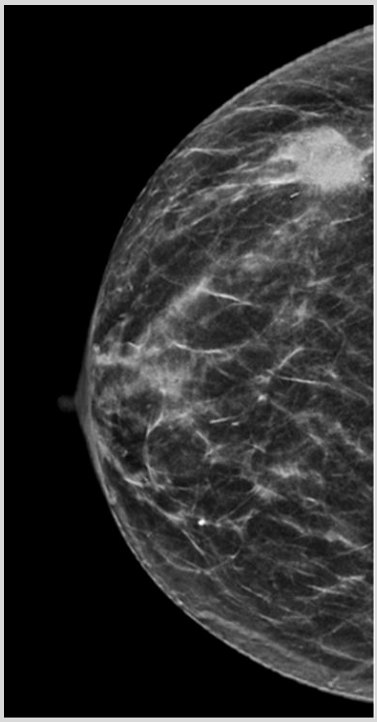

Fig. 1: Mammography image 1

Fig. 2. Mammography image 2

Discussion

Because early detection is favorable, prompt diagnosis and subsequent treatment for breast cancer are essential. To best foster understanding of diagnostic and treatment options, teaching must take into consideration the health literacy of the learner, as well as their preferred learning style and evidence-based practice teaching strategies [12]. Teaching is modified for the appropriateness of content to each individual. When preparing for mammography, teaching would include the importance of utilizing a facility with dedicated mammography equipment, technologists specifically trained in mammography as well as the patient's expectation of removing personal clothing above the waist. Additional information would include abstaining from lotions, perfumes and antiperspirants prior to the screening [13]. Because of the personal contact between practitioner and patient, it is essential that the radiologic technologists demonstrate excellent communication skills, clearly describing how the breast will be positioned and manipulated to obtain the best films. If breast ultrasound or MRI is required, similar requirements for excellent communication skills are necessary [14]. When a more invasive diagnostic tool is utilized, such as breast biopsy, the individual should receive a full explanation of the procedure prior to the event, as well as ongoing description and communication during the event. The individual should expect a pressure dressing post procedure, as well as how much discomfort to expect [15]. Post-diagnosis and treatment, the individual should be fully engaged in treatment options, with appropriate teaching to support the needs of the individual.

Although this case presented as a routine screening mammogram, initial findings indicated further diagnostic mammography which noted the rapid growth of the tumor. While subsequent treatment of biopsy, chemotherapy and radiation were also routine, it is imperative to remember that the experience was anything but routine to the patient. Multiple interactions with health care providers throughout the process were noted by the patient to be crucial to not only her mental well-being but instrumental to her ability to participate in her treatment plan positively.

Viewing the experience through the lens of the patient encourages the health care provider to value the importance of effective communication. The patient made numerous comments about the ability of both the radiology technologists and interventional radiologist to communicate with her in understandable terms, clearly describing procedures as they were occurring as well as preparing her for what was going to happen next. Additionally, they were able to answer her questions and consistently assessed her level of comfort and sense of control.

Conclusion

It is essential that females understand what is normal in both appearance and composition of their breasts as well as the importance of regular screening. A baseline mammogram will get the ball rolling for women of screening age and help to initiate early-stage disease identification and treatment.

While technical methods and practice are taught and demonstrated until proficiency, it is still necessary to consider the importance of soft skills utilized at the bedside. Communication was reported by this patient to be instrumental in her ability to retain mental clarity, positive outlook and control. Professionals can demonstrate these skills in both the academic and clinical setting, especially when mentoring novice health care providers. This ability, when combined with excellent clinical treatment plans, can enhance patient outcomes.

Conflict of interest

There are not conflict of interests within this case study.

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Contributors

Brandon Hirsch and Kelli D. Whittington are tenure track faculty at Southern Illinois University Carbondale

Ethical Clearance

Ethical Clearance was obtained via the SIUC Human Subjects Committee

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