

Male Breast Cancer – A Video Review

Sean G. DeSilva, MD, Maziar Sighary, MD, Carla Kuzmyak, BS, Abin Sajan, BS, Alicja Goracy, MD

Department of Radiology, SUNY Downstate Medical Center, Brooklyn, NY, USA.

Sean.desilva@downstate.edu

***Corresponding Author:** Sean DeSilva, MD, Department of Radiology, SUNY Downstate Medical Center, Brooklyn, NY, USA.

Abstract

Male breast cancer is expected to make up about 1% of new breast cancer cases in 2018, with an estimated 2,550 new male breast cancer cases and 480 deaths [1-3]. Men receive a diagnosis of breast cancer approximately 10 years later than women, therefore often presenting with more advanced disease, with a median age at diagnosis of 67 years of age [2, 4, 5]. In this video, we will review the normal development and anatomy of the male breast, the histological subtypes of male breast cancer, imaging considerations when working up male breast cancer, the clinical presentation of male breast cancer, the imaging appearance of male breast cancer, the staging classification, as well as prognosis and therapy of male breast cancer.

Keywords: male breast cancer, mortality, survival

INTRODUCTION

Male breast cancer is expected to make up about 1% of new breast cancer cases in 2018, with an estimated 2,550 new male breast cancer cases and 480 deaths [1-3]. Risk factors for the development of male breast cancer include advanced age; African-American race; a first-degree relative with breast cancer; genetic mutations in BRCA, CHEK2, and PALB2; radiation exposure; Klinefelter's syndrome; and increased estrogen levels, which includes conditions such as gynecomastia, liver disease, testicular abnormalities, and obesity [2]. Men receive a diagnosis of breast cancer approximately 10 years later than women; therefore, often presenting with more advanced disease with a median age at diagnosis of 67 years of age [2, 4, 5]. We will review the normal anatomy and development of the male breast, the histological subtypes of male breast cancer, imaging considerations when working up male breast cancer, the clinical presentation of male breast cancer, the imaging appearance of male breast cancer, the staging classification, as well as prognosis and therapy of male breast cancer.

Male Breast Development and Anatomy

At birth, male mammary glands are composed of mammary lobes that drain to the nipple through lactiferous ducts [5]. The breast may temporarily

enlarge slightly in the newborn male due to the presence of maternal hormones, as well as in puberty due to a transient elevation in estradiol [5, 6]. The ducts of the male breast will atrophy around puberty when testosterone levels increase significantly [5]. The components of the adult male breasts are stroma, ducts that have undergone atrophy, subcutaneous fat, and skin [5]. The male breast lacks lobules and alveoli [6].

Histologic Subtypes

Invasive ductal carcinoma not otherwise specified (IDC NOS) is the most common histological subtype seen in male breast cancer cases, comprising approximately 80% of cases. This is followed by ductal carcinoma in situ (DCIS), which makes up about 5% of cases [5]. Other, less common subtypes of breast cancer that occur in males are infiltrating mammary carcinoma with mixed features and invasive papillary carcinoma [5]. Due to the fact that breast lobular development in men is extremely rare, as it is stimulated by estrogen and progesterone, breast malignancy related to lobular proliferation such as phyllodes tumor, invasive lobular carcinoma, and lobular carcinoma in situ are rare [5]. Lobular carcinomas account for only 1-2% of cases of male breast cancer [2]. Additionally, metastasis to the breast from another primary malignancy is rare [5].

Clinical Presentation

Breast cancer in men commonly presents as a painless, palpable, retroareolar mass eccentric to the nipple [2, 5]. The mass is typically firm and may be fixed [8]. Axillary adenopathy is seen in about 50% of male breast cancer cases [8]. Other common signs and symptoms include nipple retraction, nipple discharge, bleeding from the nipple, and ulceration of the skin of the breast [2, 5, 8].

Imaging Considerations

Mammography and ultrasound are the standard radiological imaging modalities used to evaluate the breast in men and women [6]. Standard mammographic craniocaudal and mediolateral oblique views are the primary method used to evaluate males with signs and symptoms of breast cancer [2, 5, 9]. Ultrasound can follow mammography in the case of occult palpable masses, incompletely imaged palpable masses, or mammographic findings that are suspicious for breast cancer [2, 5, 9]. Note that ultrasound should be used as the initial mode of imaging for males under the age of 25 with an indeterminate palpable mass, with mammography following this in patients with findings suspicious of cancer [9]. Suspicious masses should also be biopsied for histological evaluation [2, 5, 9].

Staging Classification

Breast cancer staging is performed in a similar fashion for both men and women [2]. Stage 0 is considered ductal carcinoma in situ [10]. Stage 1 cancers are less than 2 centimeters in diameter without axillary node or distant metastases [10]. Stage 2 tumors are larger than 2-5 centimeters or with axillary node involvement without distant metastases [10]. Stage 3 lesions have spread locally or regionally, and are greater than 5 centimeters in diameter, fixed to the pectoralis muscle, or with lymph nodes fixed together in an axillary mass [10]. Stage IV cancers have distant metastases [10].

Appearance on Imaging

Male breast cancer presents similarly to female breast malignancies on both mammography and ultrasound [8]. On mammography, malignancy presents as a discrete mass with irregular margins that is subareolar and eccentric to the nipple [2, 5]. The lesions are usually unilateral [5, 8]. Abnormal axillary

lymph nodes are common [5, 8, 10]. Calcifications are less common, and only present in approximately a third of patients [8]. Findings may also include increased trabecular markings, nipple retraction, and skin thickening [5, 8, 10]. On ultrasound, breast carcinoma most often presents as a hypoechoic mass that can be circumscribed [5, 7]. The mass can also appear as vascular, complex, or cystic [5, 7].

Prognosis and Therapy

Men with breast cancer generally have lower unadjusted rates of survival than women with breast cancer; however, this can be explained by a more advanced stage of disease at diagnosis, older age at diagnosis, and shorter life expectancy for men than women [2]. Men with breast cancer are, like women with breast cancer, at an increased risk for secondary primary cancers [2]. There is also an increased risk for men with breast cancer in developing melanoma, cancer of the small intestine, rectal cancer, pancreatic cancer, prostate cancer, and cancer of the lymphohematopoietic system [2].

Treatment of breast cancer in men is based on studies performed in women, as no randomized controlled trials of local therapy have investigated men with breast cancer [2]. Breast conservation is common in women with newly diagnosed breast cancer, but uncommon in men [2]. Most men undergo mastectomy with axillary lymph node dissection or sentinel-node biopsy [2]. Radiotherapy, chemotherapy, and HER2-targeted therapy should also be offered to men according to treatment guidelines developed for women [2]. Metastatic breast cancer in men is managed in the same way as metastatic breast cancer in women [2].

Acknowledgements

Multiple images were incorporated into the video courtesy of the following sources: Getty Images. Available on : www.kqed.org/stateofhealth/24926/the-hidden-cost-of-mammograms-more-testing-and-overtreatment

Terese Winslow LLC. Anatomy of the Male Breast image.

Stanzani et al (2014). Clinics vol.69 no.2 São Paulo Feb. 2014

Male Breast Cancer – A Video Review

Video related to the discussion is available at:

<https://www.youtube.com/watch?v=NH8Fyb4iRKs>

REFERENCES

- [1] L., S.R., M.K. D., and J. Ahmedin, *Cancer statistics, 2018*. CA: A Cancer Journal for Clinicians, 2018. 68(1): p. 7-30.
- [2] Giordano, S. H., *Breast Cancer in Men*. New England Journal of Medicine, 2018. 378(24): p. 2311-2320.
- [3] Liu, N., K. J. Johnson, and C.X. Ma, *Male Breast Cancer: An Updated Surveillance, Epidemiology, and End Results Data Analysis*. Clinical Breast Cancer, 2018.
- [4] H., G.S., et al., *Breast carcinoma in men*. Cancer, 2004. 101(1): p. 51-57.
- [5] Nguyen, C., et al., *Male Breast Disease: Pictorial Review with Radiologic-Pathologic Correlation*. Radio Graphics, 2013. 33(3): p. 763-779.
- [6] Standring, S., *Gray's anatomy: the anatomical basis of clinical practice*. 2016, Elsevier Limited: New York. p. xviii, 1562 pages.
- [7] Iuanow, E., M. Kettler, and P. J. Slanetz, *Spectrum of Disease in the Male Breast*. American Journal of Roentgenology, 2011. 196(3): p. W247-W259.
- [8] Harvey, J.A. and D. E. March, *Making the diagnosis: a practical guide to breast imaging*. 2013, Saunders/Elsevier: Philadelphia, PA. p. xi, 571 p.
- [9] Mainiero, M. B., et al., *ACR Appropriateness Criteria Evaluation of the Symptomatic Male Breast*. Journal of the American College of Radiology, 2015. 12(7): p. 678-682.
- [10] Harisinghani, M. G., *Primer of diagnostic imaging*. 2018, Elsevier: Philadelphia, PA. p. 840.

Citation: Sean G. DeSilva, MD, Maziar Sighary, MD, Carla Kuzmyak, BS, Abin Sajan, BS, Alicja Goracy, MD. *Male Breast Cancer – A Video Review*. *Archives of Radiology*. 2018; 1(2): 1-3.

Copyright: © 2018 Sean G. DeSilva, MD, Carla Kuzmyak, BS, Abin Sajan, BS, Alicja Goracy, MD. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.