ORIGINAL ARTICLE

Patient Perceptions of Breast Cancer Risk in Imaging-Detected Low-Risk Scenarios and Thresholds for Desired Intervention: A Multi-Institution Survey

SA-CME

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Abstract

Purpose: To determine women's perceptions of breast cancer risk and thresholds for desiring biopsy when considering BI-RADS 3 and 4A scenarios and recommendations, respectively.

Materials and Methods: Women presenting for screening mammography from five geographically diverse medical centers were surveyed. Demographic information and baseline anxiety were queried. Participants were presented with scenarios of short-term imaging follow-up recommendations (ie, BI-RADS 3) and biopsy recommendations (ie, BI-RADS 4A) for low-risk mammographic abnormalities and asked to estimate their breast cancer risk for each scenario. Participants reported the threshold (ie, likelihood of cancer) where they would feel comfortable undergoing short-term imaging follow-up and biopsy and their anticipated regret for choosing short-term follow-up versus biopsy.

Results: Analysis of 2,747 surveys showed that participants estimated breast cancer risk of 32.8% for a BI-RADS 3 and 41.1% for a BI-RADS 4A scenarios are significantly greater rates than clinically established rates (<2% [$P < .001$] and 2%-10% [$P < .001$], respectively). Over one-half (55.4%) of participants reported they would never want imaging follow-up if there was any chance of cancer; two-thirds (66.2%) reported they would desire biopsy if there was any chance of cancer. Participants reported greater anticipated regret ($P < .001$) and less relief and confidence ($P < .001$) with the decision to undergo follow-up imaging versus biopsy.

Conclusion: Women overestimate breast cancer risk associated with both BI-RADS 3 and 4A scenarios and desire very low biopsy thresholds. Greater anticipated regret and less relief and confidence was reported with the choice to undergo short-term imaging follow-up compared with biopsy.

Key Words: Breast cancer, patient perception, risk, BI-RADS, shared decision making

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INTRODUCTION

Breast cancer screening guidelines vary among medical and governmental organizations [1-3]. These guidelines attempt to balance the benefits of early cancer detection and mortality reduction with the risks of overdiagnosis, overtreatment, false-positives, and patient distress and anxiety. The US Preventive Services Task Force and American Cancer Society recommend that patients and physicians engage in shared decision making regarding breast cancer screening [1,2]. However, to effectively engage in shared decision making, physicians must understand patient perceptions of the risks and benefits of screening. To date, research on patient perceptions of breast cancer risk has focused on recurrence and familial risk [4-8]. Furthermore, women eligible for screening mammography have limited knowledge on the concepts of overdiagnosis and overtreatment [9-12]. Thus, there is a compelling need to understand patient perceptions of mammography screening outcomes and recommendations.

The BI-RADS Atlas categorizes imaging-detected lesions into those considered safe to follow (eg, final assessment category 3, probably benign) and those suspicious for or highly suggestive of malignancy (final assessment categories 4A-C and 5) that prompt histologic investigation [13]. Based on a landmark paper from 1991, lesions with $\leq$2% risk of malignancy are managed with short-term imaging follow-up whereas lesions with >2% risk of malignancy require biopsy [14]. Proponents to increase the 2% threshold argue it would reduce both false-positive biopsies and treatment for overdiagnosed disease [15,16]. Conversely, an increased frequency of imaging follow-up could increase patient anxiety due to uncertainty of outcome. The value patients place on the decision to undergo imaging follow-up versus biopsy for low-risk abnormalities has not currently been assessed. Likewise, there are no published studies evaluating patient perceptions of breast cancer risk related to low-risk imaging-detected abnormalities, desired thresholds for intervention, or perceived regret after the decision to undergo imaging follow-up versus a biopsy for an abnormality with a low likelihood of cancer.

The purpose of this multi-institutional study was to determine screening mammography patients' perceptions of breast cancer risk when given scenarios of BI-RADS 3 and 4A recommendations and to determine their desires for short-term imaging follow-up versus biopsy in these scenarios. Secondary aims were to determine demographic and other patient-specific variables that could influence patient perceptions. Such findings could have implications for determining the appropriate malignancy threshold for BI-RADS 3 versus 4A and guide shared decision-making discussions between patients and providers.

MATERIALS AND METHODS

Participants

This study received exemption from Duke University, University of North Carolina at Chapel Hill, Albany Medical Center, and University of Texas Southwestern Institutional Review Board oversight. Between September 1, 2016, and March 31, 2017, women presenting for screening mammography at one of five breast-imaging facilities (Duke University Medical Center, University of North Carolina at Chapel Hill, University of Texas Southwestern, Riverside Radiology and Interventional Associates, and Albany Medical Center) including academic and private practices as well as urban and suburban locations, were offered surveys when checking in for their appointment. One thousand surveys were administered at each site for a total of 5,000 surveys. Women were asked to complete the survey before their mammogram. Of 3,492 completed surveys (response rate, 70%), 705 surveys were excluded from analysis because the patients presented for imaging other than mammography screening: 229 diagnostic mammograms, 202 BI-RADS 3 imaging follow-ups, 192 screening recalls, 62 screening ultrasounds, 20 biopsies, 5 screening mammograms and ultrasounds, 35 no reason indicated). The remaining 2,747 surveys from women presenting for screening mammography alone comprise the analyzed sample.

Measures

All women were given the same survey (Appendix) with questions presented in the order described in the following subsections.

Anxiety. Anxiety was assessed using the six-item short form of the State Anxiety Scale of the Spielberger State-Trait Anxiety Inventory (STAI) [17], a validated self-report measure that assesses the anxiety a person feels at that moment. Participants read six statements (eg, "I feel calm" or "I am tense") and rated each using a 4-point response scale (1 = not at all to 4 = very much) that assessed the intensity of their feelings. Using a conversion to the long-form STAI scoring system, item responses were converted to create a total score ranging from 20 to 80, with higher scores indicating greater anxiety. Scores of 34 to 36 are considered "normal" for state anxiety across different health settings for women; scores between 36 and 39 are associated with noninvasive, risky