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Review

Factors which affect use of breast conservation and mastectomy in an underinsured Hispanic population☆

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ABSTRACT

Background: Despite no difference in overall survival between breast conservation and mastectomy, significant variation exists between institutions and within populations. Less data exists about racial and ethnic minority populations. The current study was performed to evaluate variables that affect use of breast conservation and mastectomy in an underinsured Hispanic population.
Methods: A retrospective review was performed of all patients who self-identified as of Hispanic ethnicity and underwent breast cancer operations from July 2001 to February 2011 at a safety net hospital. Sociodemographic, clinical, and treatment variables were evaluated. All patients with documented contraindications to breast conservation were excluded. Univariate analysis and multivariate analysis were performed to identify variables which were associated with type of operation.
Results: The average age of the 219 patients included was 50 years. Most of the patients (93%) were insured with Medicaid or uninsured and 59% presented with clinical stage 2A/B cancers. Mastectomy was performed in 33% of patients and 67% had breast conservation. In adjusted multivariate analysis higher pathologic stage ($p = 0.01$) and English speakers ($p = 0.03$) were associated with mastectomy. By contrast, higher BMI ($p = 0.03$) and use of preoperative chemotherapy ($p = 0.01$) were associated with breast conservation.
Conclusions: In this underinsured Hispanic population, patients with higher pathologic stage and English speaking patients were more likely to undergo mastectomy. Patients who underwent preoperative chemotherapy and who had higher BMI were more likely to undergo breast conservation.

Contents

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Introduction

Long term prospective randomized controlled studies have demonstrated equivalent survival in breast conserving operations and mastectomy [1,2]. In breast cancer, quality of care goes well beyond survival as treatment can have significant impact on patient psychosocial outcomes and quality of life. Mastectomy patients may be more likely than breast conservation patients to suffer from physical symptoms after their operation, report negative impact on their sex lives, and have poorer body image [3–5]. As a result, breast conserving operations are the preferred operative treatment for early stage breast cancer [6]. Rates of breast conservation have increased with time [7–9]. Significant variation exists in the use of breast conservation with rates between 30 and 70% [10–14]. Geographic location and surgeon volume and characteristics have been found to affect use of breast conservation [8,11–13,15].

Clearly, breast cancer affects all types of women, yet as is the case in most areas of research, the majority of published data on patient choice of breast cancer operations involves patients who are non-Hispanic White (NHW), well educated, and insured [16]. Less is known about factors that impact patient decision making in minority populations. Racial and ethnic minority populations are increasing and therefore information about the decision making in these growing populations is becoming more important. Even less is known about underinsured and uninsured racial and ethnic minority populations because they are almost never included in prospective clinical trials and do not seek care at academic institutions where results are routinely published [17,18].

Some older studies have demonstrated that minority populations have a lower likelihood of undergoing breast conservation compared to mastectomy [19,20]. Much of this data, however, was published when the majority of patients underwent mastectomy and breast conservation rates were still relatively low and in some cases race/ethnicity was not reported [12,13,15]. Some more recent studies have shown that African American women are equally likely to undergo breast conservation compared to NHW [8,21,22]. In contrast, Hispanic or Latina women continue to have lower rates of breast conservation compared to NHW [23]. Breast cancer is the most common cancer in Hispanic women. Unlike other ethnicities, however, breast cancer is also the most common cause of cancer death in Hispanic women [24]. Hispanic women are less likely to undergo mammography and present with larger cancers and at later stages than NHW women [25].

The current study was performed to examine which factors affect use of breast conservation and mastectomy on an underinsured Hispanic population.

Methods

Maricopa Medical Center is a 522 bed facility which is the county, safety net hospital in Phoenix, Arizona. The population in the state of Arizona is 30.3% of Hispanic or Latino ethnicity which is much higher than the National population of 17.1% [26]. The patient base at Maricopa Medical Center is 34.5% non-English speaking and the majority are underinsured. Underinsured patients were considered to be all those patients without commercial insurance. In the State of Arizona, these patients are covered by Medicare and AHCCCS (Arizona Health Care Cost Containment System, Medicaid). Patients ineligible for AHCCCS were classified as uninsured self-pay or charity care patients. Institutional review board approval was obtained prior to the start of the study.

A retrospective review was performed of all breast cancer patients self-identified as of Hispanic ethnicity who underwent an operation for their primary breast cancer from July 1, 2001 to February 10, 2011. Patients who presented with American Joint Committee on Cancer (AJCC) clinical stage 0-IIIA breast cancer were included in the study. All patients having their primary operation prior to July 1, 2001 were excluded. Patients presenting with AJCC clinical stage IIIB (T4), or IV cancers were excluded. Patients with documented contraindications to breast conservation (multicentric disease (3 patients), extensive malignant appearing microcalcifications (2 patients)) were also excluded. Other exclusion criteria included all male patients, and all patients with a second primary or recurrence who had the primary breast cancer prior to July 1, 2001. After exclusions, a total of 219 patients comprised the study population. Sociodemographic information, clinical characteristics, treatment, and surgical outcomes for all patients were collected. For language, patients were categorized into two groups: English-speaking or Spanish-speaking. If a patient was bilingual their language category was based on patient preference. English-speaking patients were considered those patients who spoke only English, were English dominant, or bilingual English dominant.

Surgical outcomes

During the study period, information of initial operation of all patients with operable breast cancer was documented. Margin status was evaluated in all patients who underwent a breast conserving operation. Those with microscopic evidence of a transected (tumor touching ink) margin were considered a positive margin. Those with microscopic evidence of tumor within one millimeter of an inked margin were considered a close margin. The patients with positive and close margins were recommended to undergo reoperation to obtain negative margins. If a patient underwent a completion mastectomy she remained in the breast conservation group because this was the patients preferred operation.

Of previous studies identified, clinical and histopathologic variables were the primary factors considered [7–9,11,12,15]. Due to the diverse nature of the current population sociodemographic variables were also considered in addition to the clinical and histopathologic variables. In addition, BMI was also included as higher BMI may increase likelihood of breast conservation as larger segments of tissue may be resected with less cosmetic deformity. BMI is not always a direct indicator of breast size but previous data indicate that the two are highly correlated [27]. BMI was calculated by measured height and weight (weight in kilograms/height in meters squared) at time of diagnosis of breast cancer. Inferior location and upper inner quadrant location were also considered due to its potential detrimental effect on cosmetic outcome [28]. Finally, two more recent treatment related factors were considered, operations performed by a breast surgeon and use of preoperative chemotherapy prior to the breast conserving procedure. Breast surgeons were considered surgeons whose practice is limited to diseases of the breast.

Patients were initially classified as clinically node positive if they presented with clinically palpable nodes. Pathologic nodal status was the nodal status determined at operation. The sentinel node procedure at our institution has been previously described [29]. All nodes that were identified as blue stained, radioactively the hottest, and any node with a radioactive count at least ten percent of the hottest node were considered sentinel nodes. In addition, any node that was palpably abnormal was considered a sentinel node.

Statistical considerations

The study population was classified into two groups based on whether the patient underwent breast conservation or mastectomy as the planned cancer operation. Differences in sociodemographic characteristics, clinical and histopathologic variables, and type of