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Feasibility of breast conserving surgery in multifocal breast cancers

Hüseyin Kadioğlu, M.D.[a,*], Serap Yücel, M.D.[b], Şeyma Yildiz, M.D.[c], Süleyman Bozkurt, M.D.[a], Yeliz Emine Ersoy, M.D.[a], Esra Sağlam, M.D.[b], Mahmut Müslümanoğlu, M.D.[a]

[a]*Department of General Surgery, Bezmialem Vakıf Üniversitesi, Tıp Fakültesi Hastanesi, 34083 Fatih/Istanbul, Turkey;* [b]*Department of Radiation Oncology, Bezmialem Vakıf Üniversitesi, Fatih/Istanbul, Turkey;* [c]*Department of Radiology, Bezmialem Vakıf Üniversitesi, Fatih/Istanbul, Turkey*

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Abstract

BACKGROUND: Multifocal breast cancers (MFBCs) present a challenge to surgeons. Although its feasibility is still controversial, breast-conserving surgery (BCS) is not contraindicated for MFBCs. The investigators retrospectively evaluated the feasibility of BCS and reviewed histopathologic findings in patients with MFBC.

METHODS: A total of 222 patients with MFBC who were treated with either BCS (119 patients) or mastectomy (103 patients) at a single institution between January 2002 and December 2011 were retrospectively evaluated.

RESULTS: The median follow-up time was 55 months (range, 10 to 102 months). Lymphovascular invasion and lymph node involvement were significantly less frequent in the BCS group (48.8% vs 62.2% for lymphovascular invasion, $P = .04$; 52.1% vs 71.8% for lymph node involvement, $P = .002$). There were no differences in local recurrence rates between the 2 groups. The overall survival rates were 92% in the BCS group and 72% in the mastectomy group ($P = .000$).

CONCLUSIONS: BCS is a feasible and safe procedure for the removal of multifocal tumors. Extended lymphovascular invasion is associated with mortality in patients who undergo mastectomy.

Multifocal breast cancer (MFBC) is common, with reported incidences of 9% to 75%.[1] This wide range of reported incidence rates largely reflects the nonstandard definition of multifocality. Whereas some authors have defined multifocality as the presence of ≥2 malignant lesions separated by normal breast tissue,[2] others have defined it as foci separated by normal breast tissue ≥4 mm thick[3] in the same quadrant. Several slightly differing definitions can be found in the literature,[4–8] and the clinical significance of the varying definitions is unknown.

Oncologists face many dilemmas when addressing multifocal cancers. They must decide whether magnetic resonance imaging (MRI) is an effective standard for detection, whether a given tumor's history has been aggressive, whether a given tumor is large or aggregated, what their working definition of a multifocal tumor should be (as indicated above), and whether breast conservation or mastectomy (MST) would be safest for the patient. As a result, they have been unable to establish standards for preoperative

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* Corresponding author. Tel.: +90-532-426-17-38; fax: +90-212-631-89-18.

E-mail address: huseyinkadioglu@gmail.com

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diagnosis, local treatment, axillary treatment, terminology, prognosis, histologic behavior, and classification. Further complicating diagnosis is the fact that practitioners have come to differing conclusions regarding these questions, and recent studies provide a wide range of recommendations.

Some authors of recent studies have advocated breast-conserving surgery (BCS),[9,10] whereas other authors have not.[11,12] As a result, these studies have created small factions of opinion and have contributed very little to a consensus regarding treatment.

Since 2001, practitioners have been offering BCS to patients with multifocal cancer who also meet the criteria for this surgical procedure. Multifocality is defined as the presence of ≥ 2 malignant lesions in the same quadrant separated by normal breast tissue. This definition is widely used,[2,4,5] and our oncology-radiology-pathology-surgery joint council decided to use it in the definition of MFBCs. In this study, we compared the overall survival rates of our patients with multifocal tumors who were treated with BCS with those who were treated with MST.

Methods

We retrospectively evaluated the follow-up folders of patients with MFBC treated at our institution between 2002 and 2012. Patients who were male, had bilateral breast cancer, had second primary tumors, or were treated with neoadjuvant chemotherapy were excluded. Also, patients treated with taxane-based regimens and/or those with severe comorbid diseases that restrict treatment regimens were excluded to avoid disrupting the homogeneity of the patient group. Also, lack of a full pathology report and/or radiologic evaluation data was an exclusion criterion, yielding 222 patients who were suitable for our analysis. Multifocality was defined by the presence of tumors separated by normal breast tissue in the same quadrant.

The diagnosis of multiple invasive breast cancers was performed clinically by palpation, radiology, or pathologic examination. All patients underwent preoperative mammography and ultrasonography. MRI was used only for dense breasts.

All patients were evaluated preoperatively by an experienced breast cancer team, which included a radiologist, a surgeon, an oncologist, and a pathologist. All operations were performed by 2 expert surgeons (1 senior and the other junior), and pathologic examinations were conducted by 2 pathologists. The surgeons always conducted cavity examinations after the resection of tumors and performed reexcisions from sites where the pathologists and/or surgeons had been in doubt. The cosmetic results were evaluated intraoperatively by the senior surgeon after reexcisions, and unfavorable results were accepted as an indication for MST. When it was believed that the cosmetic results would be acceptable after reexcisions, BCS was preferred. Small breasts with larger tumors were considered a contraindication for BCS, because the procedure would have yielded poor cosmetic results.

Intraoperative and definitive pathologic evaluations were done by 2 pathologists at the same time. Controversial decisions were made by the senior pathologist.

Adjuvant treatments were chosen according to stage and World Health Organization performance status of the patient. Radiotherapy was applied to all BCS patients as part of the breast-conserving therapy, and radiotherapy plans were made by considering the tumor stage and nodal involvement. Involvement of >4 lymph nodes was used as a criterion for lymphatic nodal radiotherapy. Chemotherapy modalities were anthracycline-based therapies that were performed by a medical oncologist.

Menopausal status, family history, histologic types of tumors, lymphovascular invasion, tumor size, and lymph node involvement were all evaluated. Patients' menopausal status and family histories were obtained. Patients who had not had vaginal bleeding for >1 year were considered postmenopausal. Otherwise, patients were considered premenopausal. A positive family history was determined as described by the American Cancer Society: (1) 2 first-degree relatives (mother, sisters, and daughters) with breast cancer, 1 of whom was diagnosed at <50 years of age; (2) ≥ 3 first-degree or second-degree relatives (includes grandmothers and aunts) diagnosed with breast cancer; (3) both breast and ovarian cancer among first-degree and second-degree relatives; (4) a first-degree relative diagnosed with cancer in both breasts; (5) ≥ 2 first-degree or second-degree relatives diagnosed with ovarian cancer; and (6) a male relative with breast cancer.

Estrogen and progesterone receptor status and human epidermal growth factor receptor 2 (HER2/neu) status were determined by immunohistochemistry. Also, molecular subgroup (luminal A, luminal B, and triple negative) determinations were performed and used in survival analyses.

Statistical analysis

The frequency and descriptive statistics of the patients were recorded. Qualitative data were analyzed using Fisher's exact test and quantitative data using the Mann-Whitney U test. Survival analyses were conducted using the Kaplan-Meier test and Cox multivariate regression analysis, and logistic regression tests were used for subgroup analyses. Data analysis was performed using SPSS version 17 (SPSS, Inc, Chicago, IL).

Results

Of the 222 patients included in the study, 119 were treated with BCS, and 103 were treated with MST. The median ages of patients in the BCS and MST groups were 46 and 49 years, respectively ($P = .16$). The median follow-up time for the entire cohort was 55.16 months (range, 10 to 102 months).

Menopausal status, family history, histologic tumor type (invasive ductal carcinoma accounted for 71.4% of the