Postmenopozal Kadınlarda Mamografik Dansiteyi Etkileyen Reprodüktif Faktörler

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Abstract

Reproductive Factors Affecting the Mammographic Density in Postmenopausal Women

Objectives: Increased breast density indicates a higher risk of breast cancer. Also increased breast density impairs the detection of suspicious breast masses. We investigated the effects of various reproductive factors on mammographic density in the postmenopausal asymptomatic women.
Materials and Methods: A total of 260 women who admitted to mammography unit for screening mammograms were evaluated. Demographic and reproductive data were collected including, age, parity, age at menarche, age at menopause, total duration of lactation, maternal age at first delivery, time since menopause. Mammograms were evaluated for breast density according to Wolfe classification. Subjects were grouped according to mammographic density. Group 1 was constituted of 183 women (70.4%) who had low risk mammograms (N1 and P1). The second group included 77 (29.6%) women who had high risk mammogram.
Results: The age at first delivery was not statistically different between the two groups (p=0.42). Women who had low risk mammograms were older, had higher parity, higher body mass index (BMI), lower age at menarche and higher total duration of lactation, higher age at menopause and time since menopause (p=0.01, p=0.009, p=0.03, p=0.046, p=0.01 and p=0.01, respectively). Parity and BMI negatively affect mammographic density (coefficient; -0.173 and -0.158, respectively), however, increasing age at menarche positively correlated with mammographic density (coefficient; 0.142).
Conclusion: Although obesity is a well-known risk factor for breast cancer, higher body mass index was found as inversely correlated with mammographic breast density with parity. Also higher age of menarche is positively correlated with breast density.

Keywords: mammographic density, Wolfe classification, body mass index, parity and age at menarche

Özet

Amaç: Artmış meme dansitesi meme kanseri riskini arttırdığı gibi kuşkulu meme kitlesi tanısını da güçleştirmektedir. Bu çalışmada, asemptomatik postmenopozal kadınlarda çeşitli reprodüktif faktörlerin meme dansitesi üzerine olan etkilerini araştırdık.
Materyal ve Metot: Tarama mamografisi için başvuran toplam 260 hasta çalışma kapsamında değerlendirildi. Olgulara ait yaş, parite, menarş yaşı, menopoz yaşı, menopozu takiben geçen süre, toplam laktasyon süresi ve ilk doğum yaşı ve vücut kitle indeksi (VKİ) gibi demografik ve reprodüktif faktörlere ilişikin veriler toplandı. Mamografik meme dansitesi Wolfe sınıflamasına göre değerlendirildi. Olgular mamografik dansitelerine göre iki gruba ayrıldı. Grup 1 düşük riskli mamografileri (N1 ve P1) olan 183 kişiden (%70.4), grup 2 ise yüksek riskli mamografileri olan 77 kişiden (%29.6) oluşturuldu.
Sonuçlar: İki grup arasında ilk doğum yaşı açısından fark yoktu (p=0.42). Düşük riskli mamografileri olan kadınlar daha ileri yaş ve daha fazla parite, daha yüksek VKİ, daha erken menarş, daha fazla laktasyon süresi, daha geç menopoz yaşı ve daha uzun menopoz süresine sahiptiler (sırasıyla, p=0.01, p=0.009, p=0.03, p=0.046, p=0.01 and p=0.01). Değerlendirilen faktörlerden parite ve VKİ mamografik dansiteyi negatif olarak etkilerken (korelasyon katsayısı sırasıyla, -0.173 ve -0.158), menarş yaşı ile mamografik dansite arasında pozitif ilişki bulundu (korelasyon katsayısı, 0.142).
Tartışma: Artmış vücut kitlesi meme kanseri için bilinen bir risk faktörü olmasına rağmen, meme dansitesi ile arasında parite ile beraber negatif korelasyon vardır. Öte yandan artan menarş yaşı Mamografik dansite arasında pozitif bir ilişki bulundu.

Anahtar sözcükler: Mamografik dansite, Wolfe sınıflaması, vücut kitle indeksi, parite ve menarş yaşı

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Introduction

Breast cancer screening is undertaken routinely in many communities. High-risk mammographic patterns represent an increased risk of contracting breast cancer. Epidemiological studies have repeatedly shown that mammographic patterns or densities are influenced by hormonal factors. Well-known risk factors for breast cancer such as age at menarche, parity, and age at first birth have been found to be independently associated with mammographic patterns. Increased breast density on screening mammograms is associated with a four to six-fold increased risk of breast cancer (1,2). A review of eight cohort studies concluded that women with the highest breast density using Wolfe's method of classification compared with the lowest density have a relative risk of 5.2 (CI=3.6–7.5) for breast cancer (3). Also, high breast density impairs the detection of breast masses (4). A failure to detect masses due to high density would cause an increased interval to diagnosis of cancers. Difficulties in reading high density mammograms also produce false positive recalls (5). Breast density gives information of endogenous and exogenous hormones, of which the most widely used, are combined oral contraception (COC) and hormone replacement therapy (HRT). However, impact of various reproductive factors which affect mammographic density are unclear including parity, age at menarche, age at first delivery and total duration of lactation. There is consistent evidence that parity is associated with mammographic density (6). There is little information in the literature about breast density and reproductive factors. In this study, we investigated the effects of various reproductive factors on mammographic density in the postmenopausal asymptomatic women.

Materials and Methods

This study was carried out during January 2002-May 2002 in Ankara Numune Training and Research Hospital, Department of Radiology. A total of 260 postmenopausal women who admitted to mammography unit for screening mammograms were enrolled in this study. All subjects were post-menopausal (At least 12 months of amenorrhea). Exclusion criteria were known or suspected breast cancer or history of this disease, surgical menopause, and previous history of breast surgery. Also women who had history or ongoing hormone replacement therapy and history of COC use were excluded. Baseline characteristics, the age, parity, body mass index (BMI), age at menopause, age at menarche, maternal age at first delivery, total duration of lactation and time since menopause were recorded. Weight (kg) and height (cm) were measured before mammographic examination and BMI (kg/m^2) was calculated. Following this initial preparation, all subjects underwent mammographic evaluation by Elscint MAM 22 S mammography system. Mediolateral oblique and craniocaudal images from both breasts were obtained. The mammograms visually evaluated by two radiologists who were blinded about clinical features of each subject. Breast density was determined by Wolfe classification (7). Also subjects were divided as low risk group or group 1 (consisted from patients who had N1 and P1 mammograms according to Wolfe classification) and high risk group or group 2 (Wolfe P2 and Dy).

Statistical analysis was done by SPSS 11.5 (Statistical Package for Social Sciences). For comparison of continuous variables such as age, parity, BMI, total duration of lactation, maternal age at first delivery, age at menarche and age at menopause and time since menopause, Student's *t* test was used. The factors affecting breast pattern were evaluated by logistic regression analysis. *P* value less than 0.05 was accepted statistically significant.

Results

Two-hundred and sixty women were included in the study. Group 1 was constituted of 183 women (70.4%) who had low risk mammograms (N1 and P1). Seventy-seven (29.6%) women had high risk mammogram (P2 and Dy) by Wolfe Classification and named as group 2. Comparison of the covariates between group 1 and 2 are shown in Table 1. The age at first delivery was not statistically different between the two groups (p=0.42). In the group 1, 20 patients (10.9%) had family history of breast cancer and 13 patients (7.1%) had family history of endometrial, ovarian or colorectal adenocarcinoma in the first or second degree relatives. However; 5 (6.4%) and 7 patients in group 2 (9%) had family history of breast and other adenocarcinoma.

The relationship between these covariates and mammographic density were evaluated by logistic regression analysis. There was no relationship between the mammographic density and age

Table 1. Baseline characteristics of group 1 and 2

	Group 1** (n=183)	Group 2** (n=77)	p
Age (years)	53.14±7.42	49.44±5.98	0.01*
Parity	3.12±1.35	2.22±1.46	0.01*
Body Mass Index (kg/m^2)	30.30±8.55	27.16±8.90	0.009*
Age at menarche (years)	13.47±1.34	14.28±1.37	0.03*
Age at first delivery (years)	20.64±4.32	20.02±7.97	0.42
Total duration of lactation (month)	35.18±29.56	27.32±26.41	0.046*
Time since menopause (year)	7.24±5.50	5.38±5.08	0.01*
Age at menopause (years)	50.41±17.61	47.90±13.59	0.01*

*P<0.05 was statistically significant
** Values expressed as mean ± standard deviation

(p=0.534), age at menopause (p=0.389), time since menopause (p=0.497), total duration of lactation (p=0.295) and age at first delivery (p=0.670). Parity (p=0.003), age at menarche (p=0.017), and BMI (p=0.006) were related with mammographic density. Parity and BMI negatively affect mammographic density (coefficient; -0.173 and -0.158, respectively), however, increasing age at menarche positively correlated with mammographic density (coefficient; 0.142).

Discussion

Screening mammography significantly reduces the rate of mortality due to breast cancer in women 50 years of age or older. Relationship between the mammographic density and exogenous sex steroids is a well-known association. Major impact of sex steroids on breast tissue is induced densities mimicking that of breast disease and association of dense breasts with increased risk of malignant breast tumors. Increased mammographic density also causes the loss of a degree diagnostic confidence (8-10). As important contributor of increased breast density, there is now on extensive literature about interplay between the postmenopausal HRT and breast density. HRT causes increase in mammographic density in up to 25% of women and continuous combined HRT most likely to cause increased breast density than estrogen only preparations and tibolone (11). The relationship between the mammographic density and previous COC use is unclear. Most studies reported that previous COC use is not associated with elevated risk or a small increase in breast cancer risk (12-14). The role of other reproductive risk factors including parity, duration of lactation, age at first delivery, age at menopause and time since menopause which contribute mammographic density are unclear.

In this study, we found that parity and body mass index were negatively correlated with mammographic density; however, age at menarche was positively correlated. Nulliparity is the well-known risk factor for breast cancer and nulliparous women are more likely to have high-risk patterns than those with many children. The negative association between parity and mammographic density is consistent with the results from recent international collaborative re-analysis of data from most epidemiological studies (15). BMI was inversely correlated with mammographic breast density in both groups as previously reported (6). The relationship between BMI and mammographic density reflects primarily a relationship of BMI with the amount of fat tissue in the breast rather than a relationship with the amount fibro-epithelial tissue.

Age at menarche has been found positively correlated with breast density. Similar association was reported by previous literature (6,16). In this study, we did not find any relationship between the mammographic density and age at first delivery, total duration of lactation and time since menopause. However, total duration of lactation was higher in the women who had low risk mammograms. Riza et al (17) reported that total duration of lactation is an important factor that decreases the high risk mammographic pattern in pre-menopausal women; however, they did not detected statistically significant difference for postmenopausal women. Breast feeding may decrease mammographic density and protect against breast cancer by reducing rate of breast cell proliferation either by accelerating cell differentiation and/or by suppressing ovulation and thus reducing exposure of the cells to high estrogen levels (18).

As a conclusion, in this study, we evaluated the relationship between various reproductive factors and mammographic density. We detected a negative correlation between the breast density and BMI and parity also we found a positive correlation between the age at menarche and breast density. Relatively small sample size is an important drawback of this study. However, we need further studies to evaluate the effect of reproductive factors on mammographic screening.

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