




Evaluation of the effects of neoadjuvant chemotherapy on probably benign breast lesions with MRI: Report of two cases

Neoadjuvan kemoterapinin olası benign meme lezyonları üzerindeki etkilerinin MRG ile değerlendirilmesi: İki olgu sunumu

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ABSTRACT

In cases with breast cancer, probably benign lesions can also be seen in the other areas of the breast. It is known that neoadjuvant chemotherapy causes morphological changes in the normal breast tissue and the benign lesions, in addition to effects on malignant mass.

In cases with complete response with neoadjuvant chemotherapy, probably benign lesions without tissue diagnosis cause a dilemma in the breast conserving surgery plan, when they shrink or disappear at the end of the treatment. We aimed to demonstrate the effects of neoadjuvant chemotherapy in cases with probably benign breast lesions via dynamic contrast enhanced breast MRI.

Keywords: Probably benign lesion, neoadjuvant chemotherapy, MRI, breast cancer.

ÖZ

Meme kanseri olgularında memenin diğer bölgelerinde de olası benign lezyonlar görülebilir. Neoadjuvan kemoterapinin malign kitle üzerindeki etkilerinin yanı sıra normal meme dokusunda ve benign lezyonlarda morfolojik değişikliklere neden olduğu bilinmektedir.

Neoadjuvan kemoterapi ile tam yanıt alınan olgularda, tedavi öncesi doku tanısı konulmamış olası benign lezyonlar tedavi sonunda küçüldüğünde veya kaybolduğunda meme koruyucu cerrahi planında ikilem yaratmaktadır. Bu olgu sunumunda olası benign meme lezyonu olan iki olguda neoadjuvan kemoterapinin etkilerini dinamik kontrastlı meme MRG ile göstermeyi amaçladık.

Anahtar Sözcükler: Olası benign lezyon, neoadjuvan kemoterapi, MRG, meme kanseri.

INTRODUCTION

Probably benign lesions are defined as non-bright on T2W-MRI and well-circumscribed masses with focal enhancement on the contrast-enhanced MRI unlike the parenchyma in the 5th edition of the AJR BI-RADS atlas (1). Additional lesions in probably benign morphology can be seen on MRI in cases with breast cancer.

Neoadjuvant chemotherapy (NAC) is used in locally advanced breast cancers and inflammatory cancers, according to the TNM classification. It is applied in these cases to increase survival by treating possible micro metastases and to allow breast conserving surgery by reducing tumor burden (2, 3). Accurate determination of the response in the early period takes an important place in effective treatment implementation (4).

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Histological analysis showed that NAC also causes morphological changes in normal breast tissue (5). These changes are caused by fibrosis, diffuse lobular atrophy, and drug induced epithelial atrophy caused by NAC in normal breast tissue (5, 6). When the probably benign lesions show dimensional regression with NAC, if there is no initial tissue diagnosis, it causes a dilemma in the surgery plan to be performed in case of complete response.

In this case report, we aimed to demonstrate the effects of NAC in two cases with probably benign breast lesions via breast MRI.

CASE PRESENTATION

Case 1

A 35-year-old female patient was consulted to our clinic with a palpable mass lesion diagnosed with invasive ductal carcinoma (IDC) in the left breast. There was a heterogeneous type of enhancement pattern in the malignantly diagnosed mass seen in the lower quadrant of the left breast in MRI performed before NAC (Figure-1a). On MRI, a probably benign lesion was observed in the same quadrant as the malignant mass (Figure-1b). Similarly, 3 more benign lesions of oval shape with smooth borders

were observed in the right breast (Figure-1c, d). Probably benign lesion in the upper outer quadrant of the right breast was diagnosed as a fibroadenoma by core needle biopsy.

A breast MRI was performed after 12 cycles of NAC. No enhancement was observed in the malignant lesion in the left breast and in probably benign lesions in both breasts. It was reported as complete response to the NAC. Pathology result of partial mastectomy material performed bilaterally after NAC; a fibrotic area of 3 cm in diameter was observed in the left breast, no residual tumor was detected. Pathological diagnosis was complete response. The pathology result of the lesions excised from the outer and inner quadrant of the right breast was consistent with fibroadenoma.

Case 2

A 44-year-old female patient presented to our clinic with a palpable mass in her right breast with a pathology diagnosis of IDC and ductal carcinoma in situ. Before the NAC, breast MRI showed a malignant mass with a diameter of 4 cm in the upper quadrant of the right breast (Figure-2a) and probably benign lesions measuring 1 to 1.5 cm in diameter in both breasts (Figure-2b, c).

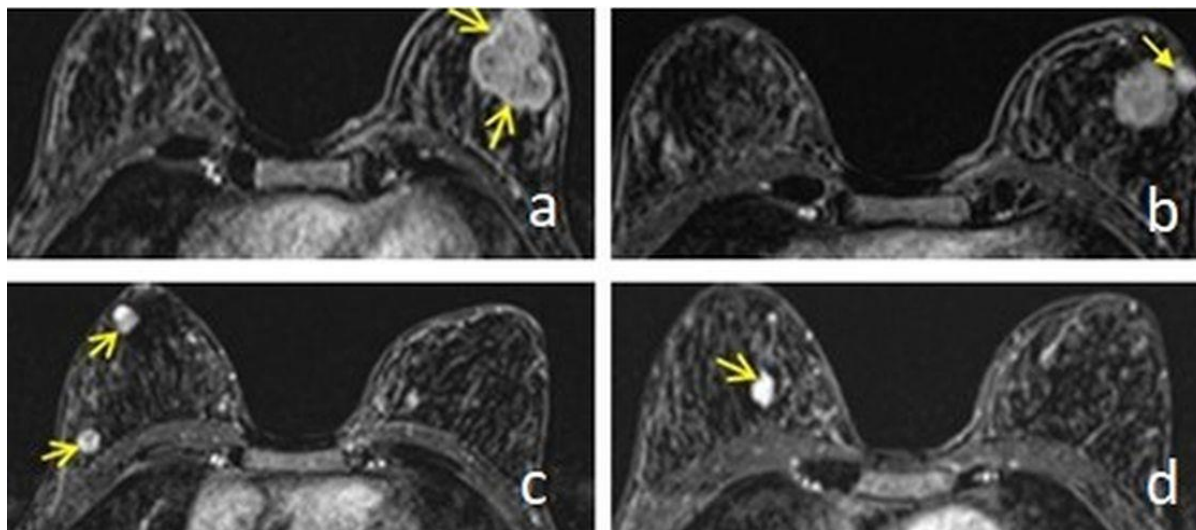


Figure-1. 35-year-old woman with biopsy proven left breast invasive ductal carcinoma.

Figure 1a. On the dynamic contrast enhanced breast MR subtracted image, heterogeneous and peripheral enhancement is seen in an irregularly demarcated mass diagnosed as malignant in the lower quadrant of the left breast.

Figure-1b. Dynamic contrast enhanced MR subtracted image shows a 1 cm diameter, well-circumscribed, probably benign lesion located close to the malignant lesion in the left breast.

Figure-1c,d. In the dynamic contrast enhanced MR subtracted image, probably benign lesions are shown in the outer quadrant of the right breast that well-circumscribed, oval-shaped, 1.2 cm and 1.1 cm diameter.

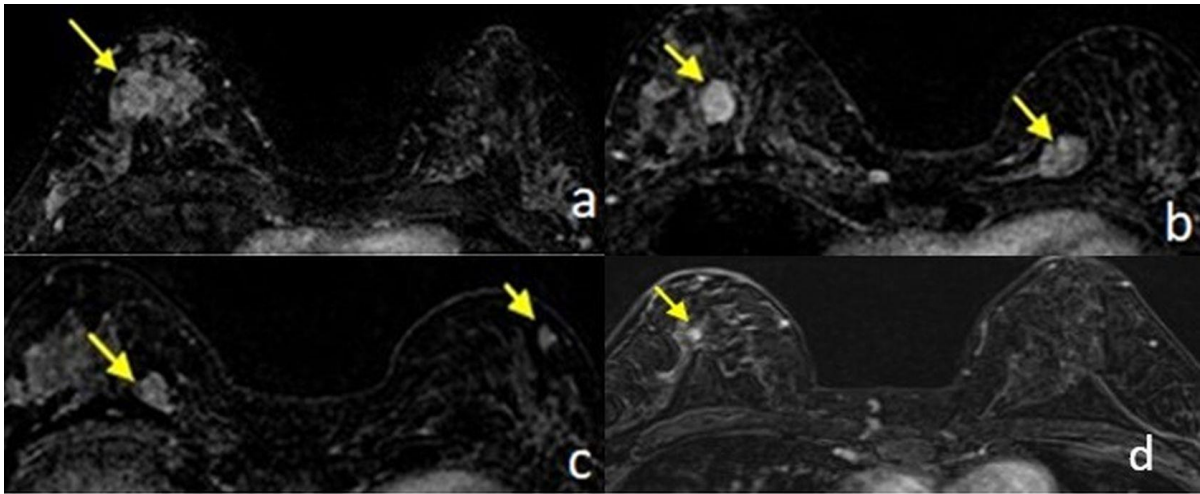


Figure-2. 44-year-old woman with palpable breast mass.

Figure 2a. Dynamic contrast enhanced breast MR subtracted image shows a malignant mass 4 cm in diameter in the upper quadrant of the right breast.

Figure-2b. Probably benign lesions in the right and left breast are shown on the dynamic contrast enhanced breast MR subtracted images.

Figure-2c. Probably benign lesions in the right and left breast are shown on the dynamic contrast enhanced breast MR subtracted images.

Figure-2d. Focal residual lesion 0.6 cm in diameter is shown on the dynamic contrast enhanced breast MR subtracted image.

US-guided fine needle aspiration biopsy was performed on the probably benign lesion in the lower inner quadrant of the left breast. Cytology result was benign. MRI performed after 12 cycles of NAC showed that the malignant mass in the right breast disappeared and a 0.6 cm diameter enhancement was observed in this area, which may be due to focal residual enhancement (Figure-2d). Similarly, the enhancement in probably benign nodules in both breasts had disappeared. MRI findings were reported as nearly complete response to the NAC. The histopathology result of the left partial mastectomy was a fibroadenoma. In the total mastectomy material of the right breast, a 0.3 cm ductal carcinoma in situ focus was observed within a 5 cm fibrotic area. In contrast, since no residual invasive tumor was detected, it was reported as a pathological complete response.

DISCUSSION

In cases with breast cancer, the next approach depends not only on the size of known cancer, but also on the presence of additional lesions that may be on the same or the other breast (7). The most valuable diagnostic tool in evaluating the distribution of the malignant lesion, detecting additional lesions, and evaluating NAC response is MRI (8). NAC causes effects on malignant

lesions as well as changes in benign and probably benign lesions. Before the treatment, biopsy is usually performed in the additional lesions showing suspicious morphology and enhancement characteristics. The malignancy rate in lesions with probably benign morphology that are detected in MRI is reported as 2% (9). A dilemma may arise in the treatment when lesions of probably benign categories respond to NAC similarly to cancer. In the study of Leddy et al., dimensional shrinkage, decrease in the enhancement, and disappearance were observed in benign lesions after the NAC similarly to the malignant lesions. In our two cases, lesions with probably benign morphology responded to the NAC in the same way as the lesion with cancer and did not show any enhancement after the treatment. Pathology results were fibroadenoma when they were excised.

NAC reduces vascular support by affecting the endothelial layer of vessels (7). Yeh et al. and Moll et al. showed increased fibrosis in normal glandular tissue, decreased cellularity and, histological changes such as lobular atrophy after the neoadjuvant chemotherapy (6, 10). It can be considered that benign lesions undergo the same process as malignant lesions during treatment and after the NAC they show a decrease in size and decrease in enhancement in MRI. With

similar changes, we can see the loss of contrast enhancement in benign lesions in MRI (7).

Our benign lesions were considerably smaller than cancer lesions and our data was limited. The tissue diagnoses of all benign lesions were not achieved before treatment. The lesions were not marked with a marker before treatment, which makes a one-to-one histopathological matching impossible.

More effective decisions can be made in the treatment plan with more comprehensive studies with a high number of cases.

CONCLUSION

It should be kept in mind that benign lesions may show decrease in size and a decrease in contrast enhancement in the dynamic contrast enhanced MRI after NAC, as in breast cancer. Tissue diagnosis should be made before treatment for lesions with probably benign morphology in different quadrants or contralateral breast in breast cancer cases who will receive NAC.

Conflict of interest: The authors declare no conflict of interest.

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