

Importance of Magnetic Resonance Imaging in the Diagnosis of Breast Hamartoma

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Introduction

- ❖ Hamartomas are benign lesions of breast comprised of glandular and stromal components, which are slow-growing and pseudocapsulated.

Introduction (cont'd)

- ❖ Mammographic and sonographic appearances may differ according to proportions of containing fibroglandular and fatty tissue
- ❖ In the absence of typical appearances on mammography (MG) and ultrasonography, diagnosis can be challenging especially in breast with dense parenchymal patterns.
- ❖ The pathological appearance is similar to normal breast tissue; therefore radiologic and clinical evaluation has great importance in the diagnosis for reducing unnecessary procedures.

Objective

- ❖ In this study, we investigated the contribution of magnetic resonance imaging (MRI) in addition to mammogram in hamartoma diagnosis .

Patients and Methods

- ❖ Our research has been conducted retrospectively, a total of 55 breast hamartomas were assessed using MG and MRI.
- ❖ Ethical approval obtained from a local committee of Health Science University of Konya Training and Research center, according to Helsinki Declaration.

Patients and Methods (cont'd)

- ❖ Breast parenchymal patterns were categorized according to BI-RADS categorization proposed by the American College of Radiology.
- ❖ We defined type A and B breast pattern as type 1, type 2 was also included type C and D breast pattern.

Patients and Methods (cont'd)

- ❖ Morphological features of hamartomas which are size, presence of the pseudo-capsule and breast pattern were evaluated with MRI and MG.
- ❖ Subsequently ; contrast enhancement assessed and apparent diffusion coefficient (ADC) values were obtained corresponding to lesion localization and normal breast parenchyma.

Statistical Analysis

- ❖ The efficacy of MRI and MG compared in determination of size and pseudocapsules.
- ❖ Then, contrast enhancement patterns of hamartomas and ADC values compared to breast tissue.
- ❖ Fisher Exact, Sign Test and Mann-Whitney U test was used to compare variables.

Results

- ❖ The mean age of all patients enrolled in the study was 52 (range, 34 to 73 years).
- ❖ Type 1 parenchymal pattern was observed in 26% of patients, while type 2 parenchymal pattern was observed in 74 %.

Results (cont'd)

- ❖ The mean diameter of the hamartomas on MRI was 5 cm, and it was 3 cm on MG ($p=0,006$).
- ❖ MRI was significantly superior to MG in detecting pseudocapsule and size ($p<0,001$).

Table 1: Comparison of MRI and MG detection status of hamartoma pseudocapsule

		HPK				
		No	Yes	Variable	<i>Ratio±SD</i>	<i>p</i>
HPK	Yes	1	27	HPK that can be detected by MRI	0.964±0.188	<0.001
	No	17	10	HPK detected with MG	0.357±0.487	

Pseudocapsule of Hamartoma (HPK)

Hamartoma pseudocapsule was noted in 27 patients and not noted in 1 patient on MRI. On MG, while 10 of which were noticed pseudocapsule, 17 of them were unencapsulated.



Figure 1a: On MG, image of right breast obtained from MLO.

1b. MLO imaging has demonstrated asymmetric opacity of radiolucent and dense areas; it is not distinctly encapsulated in upper outer quadrant of left breast (arrow).

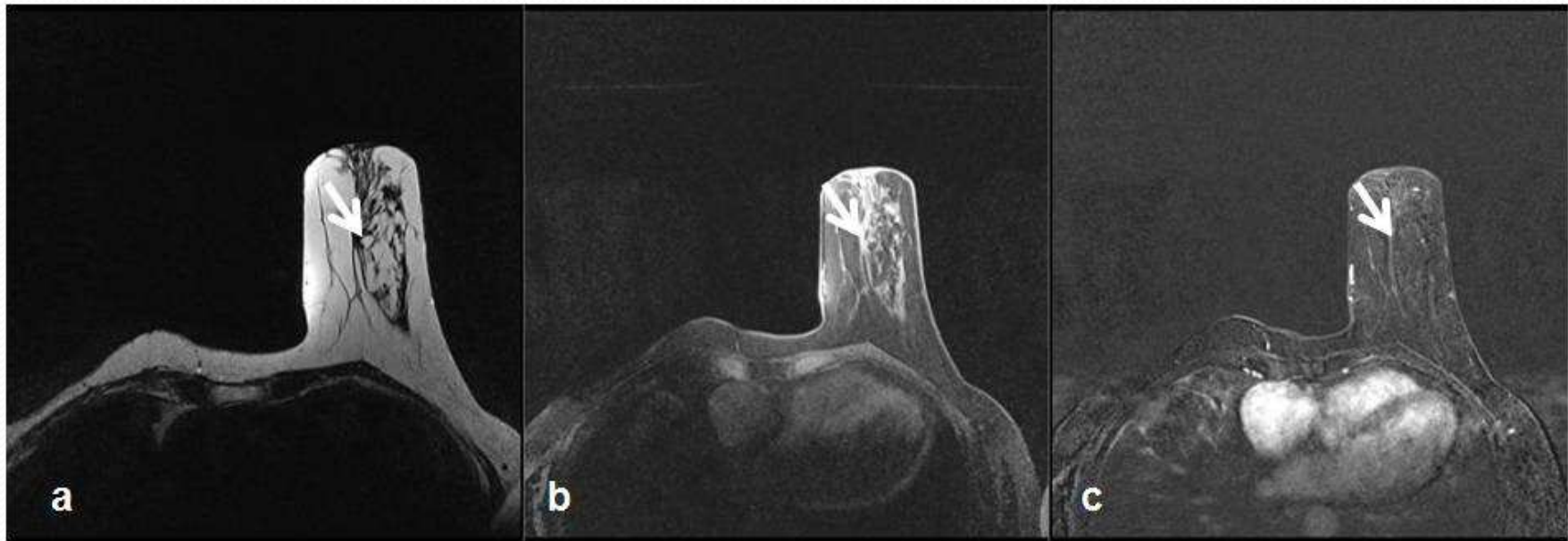


Figure 2a. Axial T2W images reveal capsulated, large size hamartoma in upper outer quadrant of left breast .

2b. On T1-weighted fat-suppressed unenhanced imaging.

2c. On T1W subtraction image; contrast enhancement is not observed in hamartoma.

Results (cont'd)

- ❖ There was no significant difference between enhancement pattern and ADC values obtained from breast tissue and hamartoma.
- ❖ All patients except 1 patient showed type 1 contrast enhancement pattern, type 2 contrast enhancement pattern was observed in 1 patient.

<i>ADC</i>	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>1Q</i>	<i>Med</i>	<i>3Q</i>	<i>p</i>
Hamartoma	27	1.44	0.26	0.8	2	1.3	1.5	1.6	0.909
Normal breast tissue	27	1.43	0.22	1	1.9	1.3	1.5	1.6	

Table 2: Comparison of ADC values obtained from hamartoma and normal breast tissue

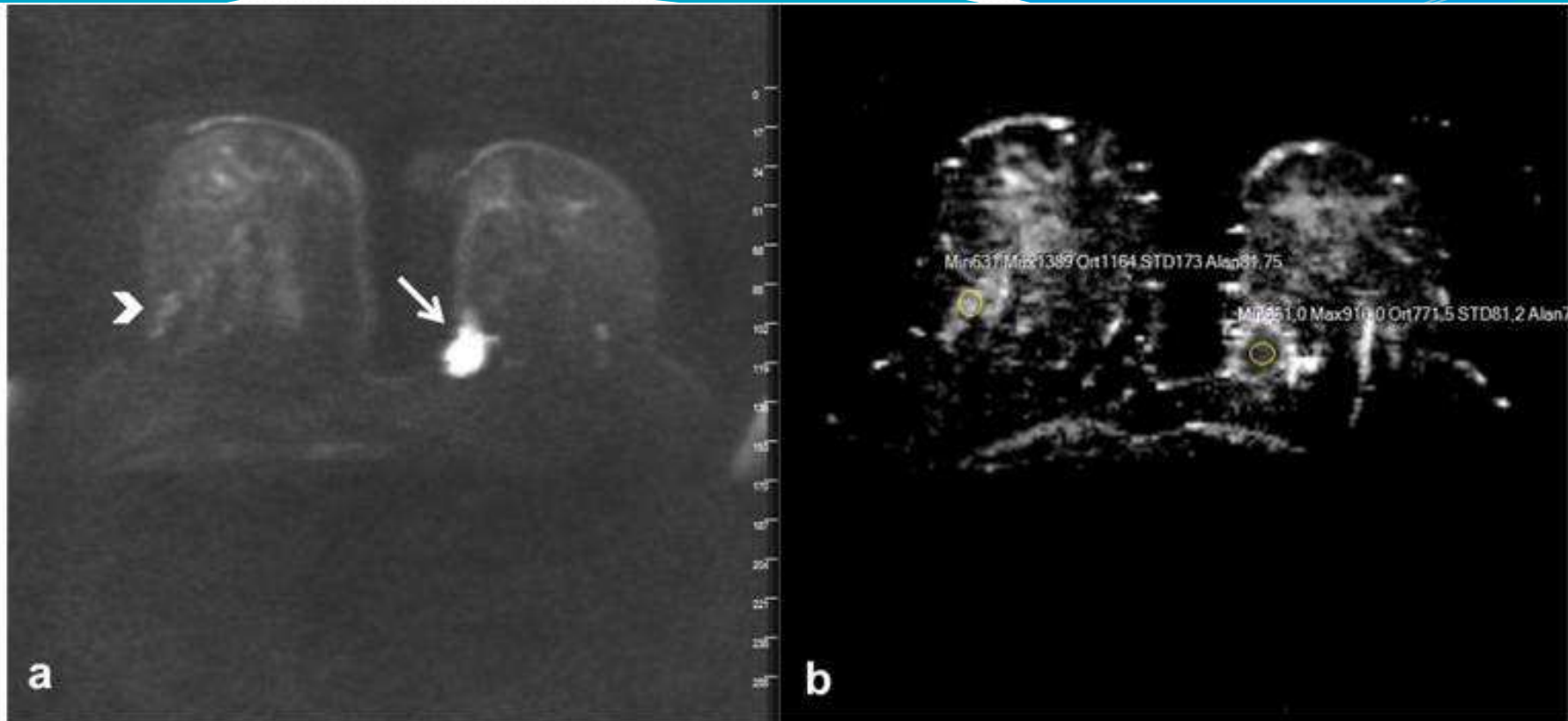



Figure 3a. On axial DWI and **3b.** ADC mapping. There is no diffusion restriction seen on hamartoma with high ADC values(>1.1)(**Arrowhead**).

A mass lesion of intraductal carcinoma with an low ADC value of 0.8 showing substantial diffusion restriction in the left breast is observed (**Arrow**).

Discussion

- ❖ Mammographic and ultrasonographic features of hamartomas are well known, but MRI images are less known.
- ❖ Mammographically; the typical hamartoma appearance cannot be identified in dense breasts.
- ❖ The contribution of ultrasonography is limited when an atypical appearance is encountered.
- ❖ Presence of these challenges and limitations may lead clinicians and radiologists to need new problem solving modalities particularly in some difficult cases.

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- ❖ Recent studies have revealed that MRI is facilitated reaching the accurate diagnosis and prevention unnecessary biopsies in these difficult cases.
 - ❖ We could easily observe the pseudo-capsule and contrast enhancement similar to breast tissue apart from parenchymal pattern on MRI.



Limitations

- Our study has limitation: despite the high number of hamartomas evaluated, the number of patients we compared was limited since each patient was not examined with MG or MRI.

Conclusion

- ❖ We assume that MRI can provide more detailed information in difficult cases; thus, MRI can be considered as an alternative imaging for accurate diagnosis and prevent unnecessary biopsies and surgeries.



Thank You

References

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