A CASE REPORT OF RARE INTRAPARENCHYMAL LEIOMYOMA OF THE BREAST – DIAGNOSTIC AND HISTOPATHOLOGICAL FEATURES

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Summary

Leiomyomas are one of the rarest neoplasms of the breast. Intraparenchymal leiomyomas can present a diagnostic challenge, as they can resemble other benign, and more importantly, malignant lesions - especially leiomyosarcomas. Here we report a case of a 28-year old female patient with a palpable mass in the right upper quadrant of the right breast and present diagnostic and histopathological features, with special reference to magnetic resonance imaging.

KEYWORDS: breast neoplasms, leiomyoma, smooth muscle tumor, magnetic resonance imaging, differential diagnosis

INTRODUCTION

Leiomyoma is a smooth muscle tumor, frequently found in the gastrointestinal and female reproductive organs, especially uterus (1). Due to its origin, leiomyoma is one of the rarest neoplasms of the breast. There are currently two subgroups - more frequent, superficial or subareolar leiomyomas, and more infrequent, intraparenchymal leiomyomas (2). We will report a rare case of breast intraparenchymal leiomyoma along with diagnostic and histopathologic features.

CASE REPORT

A 28-year old female patient with a palpable mass in her right breast presented in our surgical
outpatient clinic. On physical examination, the
firm lesion was on the border of the upper quad-
randts of the right breast. The diameter of the lesion
was around 2 cm, and the distance from the nipple
was 7 cm. Axillary lymph nodes were not en-
larged. Despite the positive history of familial
breast cancer (both grandmothers at the age of 60),
this was her first visit to a physician for a breast
check-up.

Ultrasonography (US) of the right breast
showed a 1.5 cm sized, circumscribed, oval, hy-
poechoic structure (Fig. 1). There was a suspicious
dense cyst on the initial examination, but given
the age of the patient and her positive family his-
tory of breast cancer, the cytological examination
was performed. The result of fine-needle aspira-
tion (FNA) was consistent with a mesenchymal
tumor. After that, the patient was referred for a
magnetic resonance (MR) imaging of the breast.
The breast magnetic resonance imaging (MRI)
showed the mass on the border of the upper quad-
randts of the right breast, measuring 2.2 cm in the
longest diameter. The mass was isointense with
surrounding tissue on pre-contrast T1-weighted
sequences (Fig. 2a), and it was of the high intensi-
ty on short tau inversion recovery (STIR) sequence
(Fig. 2b).

At subtraction sequences, the mass showed
intense postcontrast enhancement, somewhat het-
erogeneous in the middle, but with progressive
enhancement pattern, which in most cases indi-
cates benign mass on MRI scans (Fig. 2c). There-
fore, the MRI, in this case, was not conclusive of
benignity. There were no other signs of postcon-
trast enhancement in both breasts on the MRI
scan. The mass was assessed as breast imaging re-
porting and data system (BIRADS) 4 category.
The lymph nodes in both axillary regions were
described as reactive, benign lymph nodes, both
on US and MR examinations.

We referred the patient to open surgical biop-
sy to confirm the diagnosis. The tumor with around
1 cm of the surrounding tissue was resected.

Histopathological analysis of the specimen
revealed a well-circumscribed, rubbery white tu-
mor with a white whorled cut surface, in the mid-
dle of the resected breast tissue. The diameter of
the tumor was 1.7 cm, with free resection margins.
Histologically, it consisted of interlacing fascicles
of spindle-shaped cells with oval nuclei without
mitotic figures, cell atypia or necrosis (Fig. 3a). Im-
munohistochemical analysis showed strong dif-

Figure 1. Breast ultrasonography shows a 1.5 cm sized hypo-
echoic lesion with circumscribed margins.

Figure 2a. The T1-weighted axial MRI
shows an isointense lesion.

Figure 2b. The lesion was of high intensity
on STIR sequence.

Figure 2c. On subtraction sequences
the lesion shows intense postcontrast
enhancement.
fuse positivity for smooth-muscle actin (Dako, Clone 1A4) and strong focal positivity for desmin (Dako, Clone D33) (Fig. 3b). According to histology and immunohistochemical results, the tumor was a leiomyoma of the breast.

**DISCUSSION**

Leiomyomas are benign non-epithelial tumors, described as benign spindle cell lesions, nonspecific to mammary stroma (3). While subareolar leiomyomas are a common finding in both sexes, intraparenchymal type of leiomyomas rarely occurs middle-aged women (4). They were described in approximately 30 cases so far, with only one case in men (5). Although there are various theories, the etiology of deep parenchymal leiomyomas is still undetermined. It is most likely that smooth muscle cells, which form the tumor, originate from the walls of mammary blood vessels. Alternatively, smooth muscle lesions in the breast could form from the teratoid origin, from a multipotent mesenchymal cell, angiomatous smooth muscle, or myoepithelial cells of breast ducts (6).

Clinically, intraparenchymal leiomyomas of the breast appear as painless, firm, and mobile nodules, with well-defined borders and variable size (7). Their slow growth is consistent with their benign nature.

The diagnostic approach mostly includes mammography, sonography, needle-core biopsy, and, as in our case, magnetic resonance imaging. Leiomyomas usually appear as well-circumscribed lesions on mammography and ultrasonography. On mammography, the lesion is either isodense or hyperdense with no radial extensions, and no microcalcification (6,8). Sonographic criteria are nonspecific and include hypoechoic lesion with or without decreased posterior acoustic shadowing (9,10). Minami et al reported the first case of intraparenchymal leiomyoma evaluated by MRI. They noticed that these lesions can be divided into degenerative and nondegenerative forms using MRI, but that the MRI is inconclusive in terms of distinguishing between malignant and benign entities and/or type of degeneration (11). Our findings on MR scans correspond to features of leiomyomas arising elsewhere in the body.

The benign breast lesions remain underrecognized, which makes it even more essential to differentiate them from more aggressive and malignant entities (3). Since leiomyomas show similar clinical and radiologic features as other benign and/or malignant diseases of the breast, a thorough histological and immunohistochemical analysis should be administered (12). Differential diagnosis of intraparenchymal leiomyoma includes numerous other lesions: myofibroblastoma, fibromatosis, phyllodes tumors, benign spindle cell tumor, spindle cell myoepithelioma, fibroadenoma, adenomyoepithelioma. Nevertheless, differentiating leiomyoma from leiomyosarcoma is of great importance (2,4,13). Leiomyosarcoma is a malignant
smooth muscle tumor with a predisposition for local recurrence and distal spreading and represents a diagnostic challenge in the evaluation of smooth muscle tumors (14). Histopathological analysis of suspected lesion is the only way to differentiate leiomyomas and leiomyosarcomas. The absence of cell atypia, mitosis, vascular invasion, and necrosis favors the benign nature of the lesion (14).

The treatment of choice for intraparenchymal leiomyomas is excision with free margins. Contrary to leiomyosarcoma, no tendency for local recurrence or distal spreading is seen (9).

CONCLUSION

Intraparenchymal leiomyomas are one of the rarest described neoplasms of the breast. The lack of specific radiologic features and a wide range of differential diagnoses, which include not only benign breast lesions but, more importantly, aggressive and malignant entities, makes it difficult to establish an accurate diagnosis. The only definite diagnostic method is the histological evaluation of the lesion. The presented case is the second reported case of leiomyoma of the breast recognized on MRI. In our opinion, MRI is of great value for the diagnosis and evaluation of benign breast lesions, as it can detect and characterize small lesions and provide essential information for adequate treatment and follow-up.

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REFERENCES


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