Common and particular aspects of breast hamartomas - a ten-years retrospective study

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Purpose

To correlate the clinical, sonographic, mammographic and pathological aspects of hamartomas of the breast in order to assess the common and particular characteristics.

Methods and Materials

- We reviewed 4049 patients admitted to the Surgery Clinics of Tg-Mures between 1999-2010 who had undergone surgical procedure of the breast
- 10 breast hamartomas (2 homolaterally situated) were histopathologically confirmed in 9 patients
- Clinical, sonographic, mammographic, and pathological findings were analyzed

Results

- All patients were female, with an average age of 31.6 years (range 11-70 years old), most of them young (77.7%)
- All patients had clinically palpable lumps, one presenting breast asymmetry and pain
- Sonography was performed in all cases and mammography in 3 patients
- Mammographically, all hamartomas presented as heterogeneous well encapsulated masses with internal fat density and no calcifications
- Variations in sonographic appearance were not helpful for diagnosis in 4 cases (3 of them suggesting fibroadenoma, and one phyllodes tumor)
- Our youngest patient had no sonographic aspect suggestive for fibroadenoma or phyllodes tumor and preoperative fine needle aspiration cytology favored a phyllodes tumor
- Needle core biopsy performed in other 3 cases revealed non-specific findings
- Quadrantectomy was performed in all cases
- Macroscopically, hamartomas ranged from 10 to 36 mm (mean 23.4)
- Microscopically, all lesions consisted of a mixture of breast and fat tissue. One case displayed angiomatous changes and 3 cases epithelial changes (apocrine metaplasia, sclerosing adenosis, myoepithelial proliferation, cyst formation)
- No malignant transformation or tumor recurrence were encountered

Discussions
Hamartoma of the breast

- rare benign fibroepitelial tumor, with a low reported incidence (0.1-0.7%) [4,5,6], representing 3.9-4.8% of all breast tumors [5]
- with a very low incidence of associated malignancy or recurrence [1,2 ]
- first described as a tumor-like malformation (Albrecht, 1904), afterwards defined as a well-circumscribed lesion with various amounts of benign epithelial elements, fibrous tissue and fat [3]
- usually encountered in premenopausal women, but also described in childhood [7] and in women over 70-year old [6]
- have also been reported in breast ectopic tissue [8,9], during pregnancy [10], and in male patients [11]
- may reach large sizes (10, 20 cm or more) [12,13,14,15] and also can be multiple #
- rarely, carcinoma can arise from or within breast hamartomas: ductal or lobular carcinoma in situ [16], invasive ductal [17,18] or lobular carcinoma [19], or both in situ and invasive ductal carcinoma [20] #
- recurrence must be also considered [1,6]
- the diagnostic modalities are: clinical, radiologic, imaging, and pathologic
- common and particular aspects of breast hamartomas are discussed, based on a ten - years retrospective study, emphasising the importance of diagnostic correlations between methods

Clinical aspects

- generally asymptomatic
- mobile, with soft to firm palpable painless breast lump [6] or
- rarely, breast asymmetry # large, giant breast hamartomas [12]
- all patients included in this study had clinically palpable masses, one with breast asymmetry due to a firm painfull lump, similar to a fibroadenoma

Mammographically

- usually diagnosed on mammography
- increasing use of mammography # more frequently diagnosed nowadays [6]
- the classical aspect appears as a result of admixed of fat and fibroglandular tissue within the lesion, described as a "breast within a breast" [21, 22, 23]: well circumscribed ovoid or round encapsulated opacity, of mixed inhomogenous density, containing fat, with peripheral radiolucency
- not always typical features ( i.e. intratumoral calcifications)
- some authors consider that further evaluation or surgical excision is not necessary [22] if mammographic features are typical, but careful follow-up is recommended because of the risk of malignancy
- others [24], sustain that in the case of radiologic-pathologic concordance further surgical excision is not longer requested
only 3 of our patients were over 40-years old and underwent mammographic examinations # all of them presented characteristic appearances (Fig. 1, 2, 3, 4)

On Sonography

• various appearance [22]
• the most characteristic features of breast hamartomas are [23, 25, 26]: encapsulated, solid heterogenous mass with internal sonolucent fat, avascular lesions on color Doppler, compressible with transducer, displacement of surrounding normal breast tissue, no posterior acoustic shadowing
• some hamartomas appear uncharacteristic on sonography: indistinct margins, internal calcifications or cystic areas
• in our study, 6 out of 10 breast hamartomas displayed common sonographic findings; the other 3 cases were suggestive for fibroadenoma, or phyllodes tumor
• only the 11 year old prepuberal girl, who presented breast painfull asimmetry due to a rapidly growing lump, demonstrated a large heterogeneous sonographic lesion (36 mm) with some microcystic internal areas and rich vascularised zones on color Doppler examination (Fig. 5, 6)

Pathologically #

• generally, no distinctive apearance [4] # may be underdiagnosed by histology alone and reported as a "normal breast tissue" [1, 27]
• fine needle aspiration cytology (FNAC) and needle core biopsy are limited in most cases (insufficient, inconclusive or non-specific) [6]
• three (fibrous, fatty, or fibro fatty hamartoma) [28] or four category classification (encapsulated fibrocystic changes, fibroadenoma with fibrous stroma, fibroadenoma-like, and circumscribed adenolipoma) [29] of the microscopic aspect of hamartoma have been described in the literature, none of them unanimously accepted #
• pseudo-angiomatous stromal hyperplasia (capillary-like spaces in the stroma) can appear in premenopausal women under hormonal influence #
• a single case of vascular breast hamartoma has been reported in the english medical literature, in a 5-year old girl [7]
• one of the cases we have studied, the 11-year old girl, had a rapidly growing breast hamartoma with uncharacteristic clinical, sonographic and pathological features: painfull breast lump, large heterogeneous 36 mm lesion, microcystic areas on B-mode ultrasound and areas of rich vascularisation on color Doppler examination; FNAC corresponded to C3 category, suggesting a phyllodes tumor; microscopical and immunohistochemical profile demonstrated an angiomatous hamartoma, without any signs of malignancy (more than 75% of the stroma contained numerous vessels of small and large size, vessels difusely positive for specific markers as CD31, factor VIII and for Desmin and the
gynecomastoid-like proliferation within the ducts was positive for CK5/6 in a mosaic pattern) #
- other 3 cases presented epithelial changes (apocrine metaplasia, sclerosing adenosis, myoepithelial proliferation, cyst formation). (Fig. 7, 8, 9, 10)

Images for this section:
**Fig. 1:** Mediolateral oblique mammogram reveals typical features of breast hamartoma in a 37-year-old woman
Fig. 2: Craniocaudal mammogram of the same patient

Fig. 3: The left breast of a 67-year-old patient: craniocaudal mammogram (detail) shows a well-circumscribed lesion with fat and fibroglandular tissue within it
**Fig. 4:** The right breast of a 54-year-old woman: craniocaudal mammogram demonstrates the hamartoma in the external quadrants, added to fibroglandular tissue.

**Fig. 5:** Characteristic B-mode sonographic aspects of hamartoma in a 37-year-old female.
Fig. 6: Color Doppler examination of the same case
Fig. 7: Citology (PAP stain) : mixed population of cells including a large number of epithelial and myoepithelial cell groups but also many stromal cells
Fig. 8: The tumor is composed of ducts and acinar structures with a lobular arrangement surrounded by fibrous hypocellular edematous stroma and areas of adipose tissue (HE)
Fig. 9: More than 75% of the stroma contained numerous vessels of small and large size (HE)
Fig. 10: The vascular component is strongly and diffusely positive to CD31
Conclusion

- Hamartomas are rare entities, some with particular characteristics.
- The appropriate diagnosis require clinical, imaging and pathological correlations.

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References


Keywords

- Breast Neoplasms
- Ultrasonography
- Mammography

MeSH 2004

**Breast Neoplasms** (C04.588.180)

Tumors or cancer of the human BREAST.

**Ultrasonography** (E01.370.350.8500)

The visualization of deep structures of the body by recording the reflections of echoes of pulses of ultrasonic waves directed into the tissues. Use of ultrasound for imaging or diagnostic purposes employs frequencies ranging from 1.6 to 10 megahertz.

**Mammography** (E01.370.350.700.500)

Radiographic examination of the breast.

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