

A RARE PRESENTATION OF BREAST CANCER

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The case of a 67-year-old woman with a large lump in the left axillary region and the left breast is presented. Pathologic investigation of these masses in 2 hospitals was inconclusive.

Further work-up in our radiologic department showed beside the presence of the two tumoral masses, abnormalities with the radiologic characteristics of granulomatous mastitis. Final pathologic analysis showed the presence of an invasive ductal carcinoma in the two masses in combination with a granulomatous stromal reaction.

Key-word: Breast neoplasms, diagnosis.

Case report

A 67 year-old woman with no medical history presented several open wounds in the left breast since 2007.

In march 2009 the woman visited her general practitioner because she had felt a lump in the left axillary region and fluid discharge was present from the persistent open wounds in the left breast.

The patient had no fever.

The general practitioner sent the woman to a regional hospital, because he suspected underlying abscedation.

Breast mammography and ultrasound was performed and showed a large mass in the left axilla and the left breast. Fine needle aspiration, core biopsy and incisional biopsy of the two masses showed inflammatory changes without signs of malignancy.

Because of the conflict between the worrisome imaging findings and the reassuring pathology results, the patient was sent to a larger breast center for a second opinion.

Repeated fine needle aspiration and core biopsy of the two masses confirmed the inflammatory changes but also a few atypical cells were found which were suspicious for malignancy.

Subsequently the patient was sent to our radiologic department for a third opinion.

Clinical exam showed a red oedematous left breast with a few ulcerations in the upper lateral quadrant.

A large mass was palpated in the lateral part of the left breast as well as a large axillary mass with the presence of an antiseptic wick. Still a

large amount of purulent fluid was drained by this wick.

Clinical exam of the right breast, right axilla and left infraclavicular and supraclavicular regions were negative. Culture of the fluid from the open wound in the left axilla showed the presence of *Staphylococcus Aureus*.

Because of the swelling, edema and fluid discharge, only a mammogram of the right breast was taken, which showed no abnormalities.

An ultrasound was repeated and showed a large well demarcated axillary mass. This mass was built up out of a vascularised solid component in the lower half and a liquefied component in the upper half with inlying air bubbles (Fig. 1).

Diffuse breast edema was present, mainly in the outer quadrant. In the left upper outer quadrant a vertically orientated irregular mass was present (Fig. 2A). Just beneath this irregular mass, a tubular mass was present which connected two skin ulcerations (Fig. 2B). A few cystic zones were present in the tubular mass.

PET-CT confirmed the imaging findings on ultrasound (Fig. 3).

A core biopsy was performed of the two masses with as aim the solid component of the axillary mass and the stellar ends of the vertically orientated mass.

Analysis of the core biopsies showed as well in the axillary as in the breast mass the presence of a poorly differentiated invasive ductal adenocarcinoma with a lymphoplasmocytic and granulomatous stromal reaction.

Because of the extent of the tumoral mass neo-adjuvant chemo-

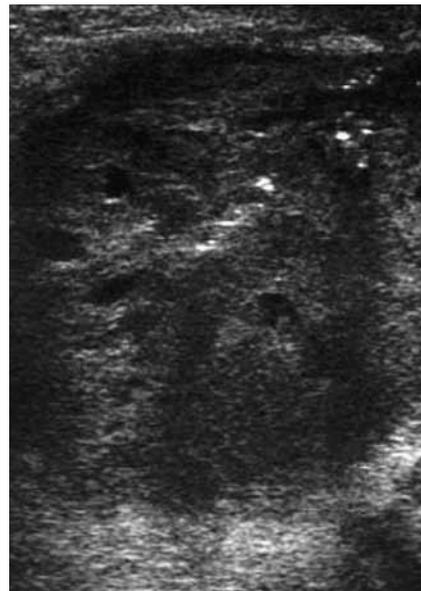


Fig. 1. — Ultrasound of the left axillary mass shows the solid lower component.

therapy was started (Taxotere for 8 cycles). This was associated with Clamoxyl for 2 months because of the associated *Staphylococcus Aureus* infection.

Three months later control mammography (Fig. 4) and ultrasound showed an evident regression of the tumoral mass in the left axilla and left breast. Shortly afterwards mastectomy in association with conventional axillary lymph node dissection was performed. Pathology of the resected specimen showed no residual tumor (ypT0N0). Adjuvant chemotherapy was given (Taxotere for 3 cycles), followed by radiotherapy of the left thoracic wall and tributary areas of the axillary lymph nodes.

Discussion

The presence of a granulomatous stromal reaction in combination with an invasive breast tumor is an

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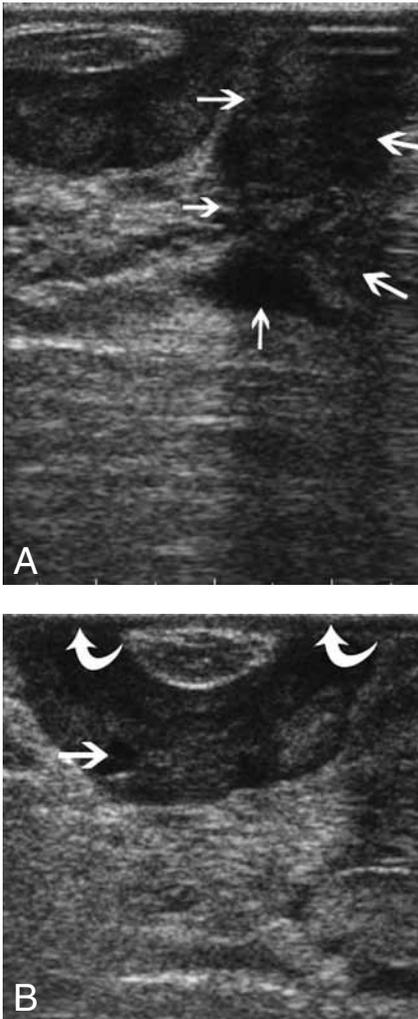


Fig. 2. — Ultrasound of the left breast mass in the upper lateral quadrant shows on A the vertical orientated, irregular demarcated mass (arrows) and on B a tubular mass connecting two skin ulcerations (arrowheads) with presence of a few cystic zones (arrow).

unusual feature. Witnesses are the few literature reports on this subject, almost exclusively in histopathologic journals.

Other tumors which are frequently associated with a granulomatous stromal reaction are non-Hodgkin lymphoma, Hodgkin lymphoma, testicular seminoma, renal cell carcinoma, nasopharyngeal carcinoma and ovarian dysgerminoma (1).

Granulomatous reaction is also seen in lymph nodes draining a tumor with or without the presence of metastasis and is defined as a sarcoid reaction or sarcoid-like lymphadenopathy (1).

The cause of the granulomatous stromal reaction is unclear.

Some authors interpret the reaction as a T-cell mediated immune response to an antigen expression of the carcinoma acting as the local trigger (2).

Others suggest it to be an idiopathic foreign body reaction to the necrotic zones in the tumor or as a part of a known systemic granulomatous disease (3).

Some pathologists suggest to use the reaction as a sign of micro-invasion (4).

Radiologic literature doesn't mention the radiological image of a breast tumor with a granulomatous reaction.

However no correlation between this phenomenon and granulomatous mastitis is cited in literature, the resemblance on imaging in our case is striking. There is not yet enough information in literature (due to the rarity of granulomatous tumoral reaction) to suggest that these two

entities are synonyms or that they are components of the same spectrum of granulomatous reactions.

As in granulomatous mastitis a tubular mass and skin sinuses were present in our case, what made us mention granulomatous mastitis in our differential diagnosis list.

Granulomatous mastitis is an idiopathic granulomatous lobulitis (5-9). Auto-immune reaction or local damage are postulated as possible causes.

In contrary to malignancy, granulomatous mastitis tends to present in a younger population (typically postpartum) but an older age at presentation is possible (5-9).

Granulomatous mastitis is a known mimicker of malignancy on imaging. Mammography can be negative or it also can present as a focal mass or poorly defined asymmetry (often retro-areolar) sometimes with the presence of edema (5-7).

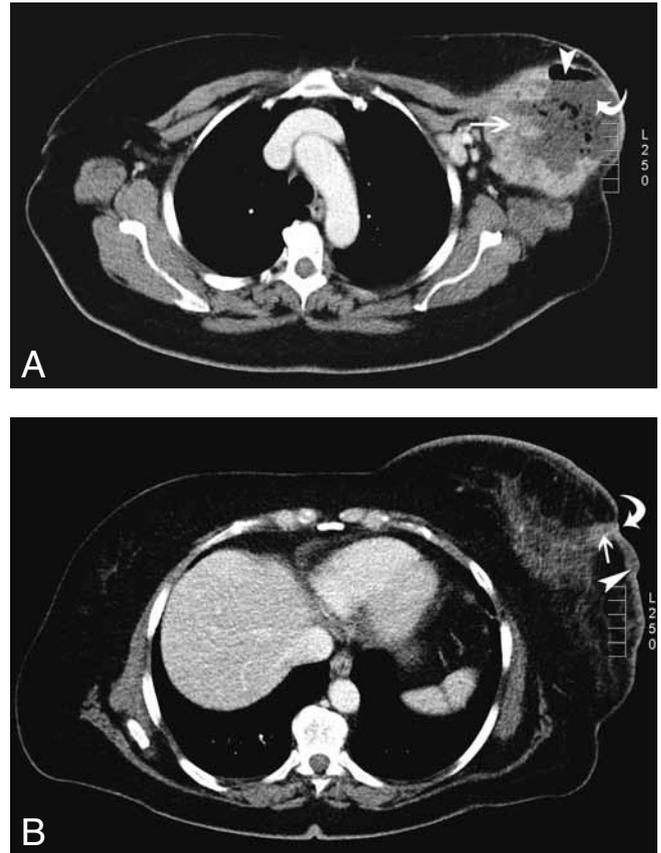


Fig. 3. — Axial images of contrast enhanced PET-CT show on A the partially liquefied (curved arrow) axillary mass with peripheral nodular, contrast enhancing, solid components (arrow). Notice also the present of air in the liquefied part (arrowhead). On B the tubular mass (arrow) is seen in the left upper lateral quadrant connecting skin ulcerations (curved arrow). Note also the diffuse skin thickening (edema) (arrowhead).

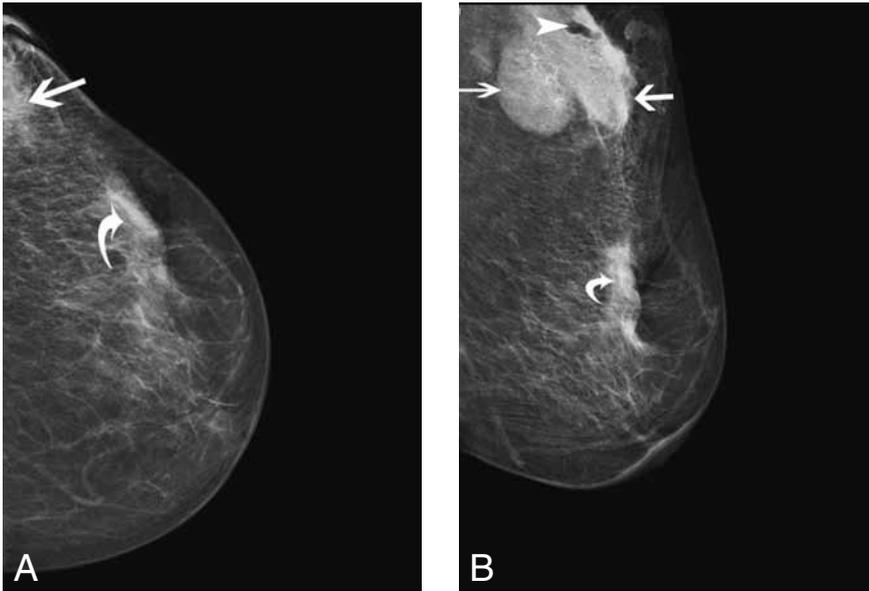


Fig. 4. — Craniocaudal and oblique mammography of the left breast shows the irregular demarcated large opacity (arrow) in the axillary region which contains air (arrowhead) and the more tubular density in the left upper lateral quadrant (curved arrow) with adjacent skin retraction. Note also the residual breast edema.

On ultrasound it can present as multiple irregular, clustered, tubular hypoechoic lesions; large irregular hypoechoic mass(es) with sometimes the presence of hypoechoic linear tracks to the skin (cutaneous sinuses) or abscesses (5, 7). Edema is also frequently encountered.

MR-imaging has similar findings as ultrasound but it can better depict the microabscesses as T2-hyperintense masses which have a typical rim enhancement on T1-weighted imaging (8). MRI gives also a better overview of the extend of the disease and can exclude mimickers such as fat necrosis (6, 8).

Conclusion

Although no other radiologic reports on granulomatous reaction in a breast tumor are available to our knowledge, we presume that when a patient presents aside a tumoral mass, imaging characteristics of granulomatous mastitis, you can suggest this rare diagnosis.

This can help your pathologist to rime the granulomatous and tumoral changes when analysing a core biopsy or cytology.

On the other hand, a malignant tumoral process should be in your differential diagnostic list whenever

mentioning granulomatous mastitis or granulomatous reaction.

When core-biopsy or fine-needle aspiration (FNA) are negative but imaging features are suspect for malignancy, as in our case, it is designated to repeat the biopsy aiming on the peripheral non-necrotic zones. This modus operandi narrows the false negative biopsies/FNA down.

References

1. Bhatia A., Kumar Y., Kathpalia A.S.: Granulomatous inflammation in lymph nodes draining cancer: a coincidence or a significant association. *Int J Med and Med Sc*, 2009, 1: 13-16.
2. Bässler R., Birke F.: Histopathology of tumour associated sarcoid-like stromal reaction in breast cancer. An analysis of 5 cases with immunohistochemical investigations. *Virchows Arch A Pathol Anat Histopathol*, 1988, 412: 231-239.
3. Santini D., Pasquinelli G., Alberghini M., Martinelli G.N., Taffurelli M.: Invasive breast carcinoma with granulomatous response and deposition of unusual amyloid. *J Clin Pathol*, 1992, 45: 885-888.
4. Coyne J., Haboubi N.Y.: Micro-invasive breast carcinoma with granulomatous stromal response. *Histopathology*, 1992, 20: 184-185.
5. Yilmaz E., Lebe B., Usal C., Balci P.: Mammographic and sonographic findings in the diagnosis of idiopathic granulomatous mastitis. *Eur Radiol*, 2001, 11: 2236-2240.
6. Van Ongeval C., Schraepen T., Van Steen A., Baert A.L., Moerman P.: Idiopathic granulomatous mastitis. *Eur Radiol*, 1997, 7: 1010-1012.
7. Hovanessian Larsen L.J., Peyvandi B., Klipfel N., Grant E., Iyengar G.: Granulomatous lobular mastitis: imaging, diagnosis, and treatment. *AJR*, 2009, 193: 574-581.
8. Kocaoglu M., Somuncu I., Ors F., Bulakbasi N., Tayfun C., Ilkbahar S.: Imaging findings in idiopathic granulomatous mastitis. A review with emphasis on magnetic resonance imaging. *J Comput Assist Tomogr*, 2004, 28: 635-641.
9. Memis A., Bilgen I., Ustun E.E., Ozdemir N., Erhan Y., Kapkac M.: Granulomatous mastitis: imaging findings with histopathological correlation. *Clin Radiol*, 2002, 57: 1001-1008.