European Journal of Radiology Open 4 (2017) 138–140

Contents lists available at ScienceDirect

European Journal of Radiology Open

journal homepage: www.elsevier.com/locate/ejro

Case Report

Primary breast chondrosarcoma: Imaging and pathological findings

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ARTICLE INFO

Keywords:
Breast cancer
Primary breast chondrosarcoma
Breast MRI

ABSTRACT

We present the case of a 62 year-old woman who was admitted to our institute of radiological sciences for a breast mass developed in the last few months. The final diagnosis was primary breast chondrosarcoma and the surgical treatment performed, based on imaging and pathological findings, was the mastectomy.

1. Introduction

Breast sarcomas are uncommon and in particular the primary breast chondrosarcoma is extremely rare [1–5]. They represent a challenge for physicians because the diagnosis and the decision of the preferred surgical treatment are often difficult being not common. Most of information reported in literature are in form of case report considering the rarity of that kind of tumour.

2. Case presentation

A 62 year-old woman was referred to our radiology department due to a rapid growth of a mass in the right breast in the last few months. Clinical examination revealed a palpable and mobile mass on the superficial and deep planes, which was not painful. The ipsilateral axillary lymph nodes appeared to be of normal size. The mammography showed a dense mass (90 × 90 mm) with polilobate contours, involving all four quadrants of the right breast, with few calcifications in the centre. (Fig. 1A-B). The sonography showed a disomogeneous and mixed mass, partially solid with fluid areas in the centre and great peripheral vascularity vessels detected at color Doppler (Fig. 2). The breast-MRI revealed an almost completed, capsulated, solid and disomogeneous mass with central fluid component and peripheral contrast enhancement (CE); the internal part of the mass did not show CE due to condroid and necrotic areas (Fig. 3A-B). No invasion of the pectoral muscle, skin and no abnormal lymph nodes were detected by MRI. Tru-cut biopsy showed a tumour composed of many areas of atypical cells, arranged in bundles, with atypical and hyperchromic nuclei.

The surrounding stroma showed chondroid differentiation with polymorphic cells embedded in basophilic matrix (Fig. 4A-B).

After surgical removal macroscopic findings showed a voluminous nodular mass with irregular borders with grey translucid appearance and focal necrotic and heamorrhagic areas. The histologic pattern, performed after surgical removal of the lesion, confimed the histological diagnosis carried out by the biopsy: areas of chondroid tissue with the absence of phyllodes tumour. Immunohistochemical staining demonstrated cytoplasmic positivity for S-100 in the chondroid areas and also diffuse positivity for vimentin, while it was negative for estrogen, progesterone and HER2 receptors.

Then, a whole-body i.v. contrast enhanced CT examination was performed which showed no evidence of distant metastasis (Fig. 5A-B).

The surgical treatment was based on mastectomy; chemotherapy and radiotherapy were not administered due to chondrosarcomas resistance.

3. Discussion

Breast sarcomas are rare; they represent a heterogenous group of tumours, with a prevalence of 0.5% of all breast tumours, and in particular the primary breast chondrosarcomas are extremely uncommon. In literature just few cases of primary breast chondrosarcoma are reported [1–5], the case described here should be the first that includes all imaging findings: mammography, ultrasound and MRI. Breast-MRI is useful to revealed abnormal lymph nodes, invasion of the pectoral muscle and/or skin, but it does not add any important information about the nature of the mass, even if the absence of CE in the central

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http://dx.doi.org/10.1016/j.ejro.2017.11.001
Received 3 July 2017; Received in revised form 30 October 2017; Accepted 1 November 2017
Available online 05 November 2017

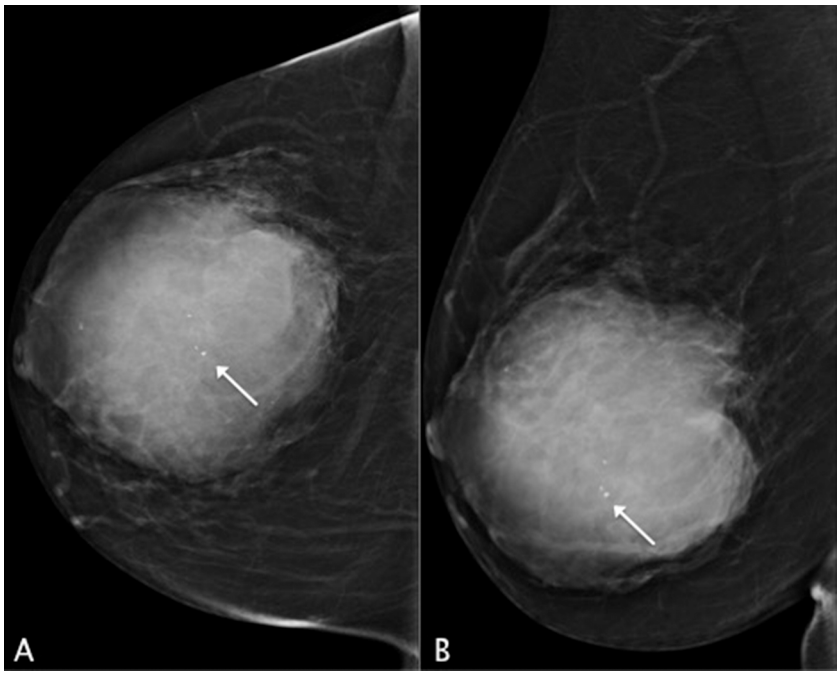

Fig. 1. (A,B) Mammography. A mass, involving all four quadrants with microcalcifications in the centre (arrow), is seen in the right breast.

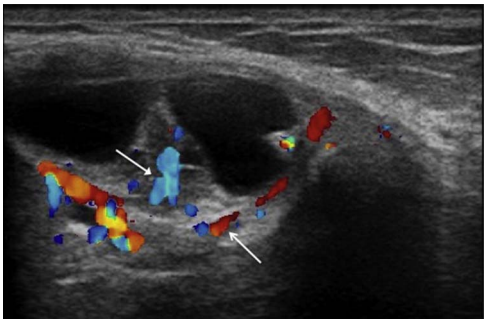

Fig. 2. The mass, mixed fluid and solid, showed great peripheral vascularity and penetrating vessels at color Doppler (arrow).

part of the mass could suggest a necrotic and/or condroid area as confirmed by the histologic pattern performed after surgical removal of the mass. Sarcomas represent a challenge for physicians in order to choose the right surgical treatment; mastectomy seems to be the preferred surgical treatment when the mass involves all four quadrants, like in our case, while some authors suggest quadrantectomy instead of mastectomy when just a quadrant is involved by the tumour or if the tumor has a small size [6,7]. Rarely lymph nodes are involved in case of sarcomas due to haemotogenous dissemination, then mastectomy should not be associated with axillary lymphadenectomy. Due to its negativity for progesterone and estrogen receptors, chemotherapy and radiotherapy are not sufficiently sensitive for these kinds of tumours.

4. Conclusion

The biopsy must be performed in every single case of suspected breast sarcoma. Although imaging findings, including breast MRI are useful, the nature of the nodule/mass is defined by the biopsy. In case of breast sarcoma an accurate diagnosis is essential because they represent a separate entity from the most common breast tumours, and both treatment and prognosis are different.

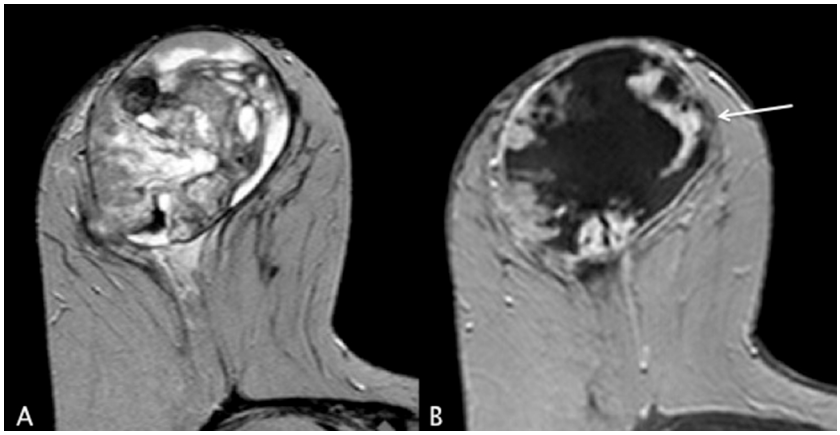

Fig. 3. (A) Breast MRI. T2-weighted image showed a disomogeneous solid mass with central fluid areas. (B) Post-contrast dynamic image revealed an intense peripherical CE (arrow), the central area did not show CE.

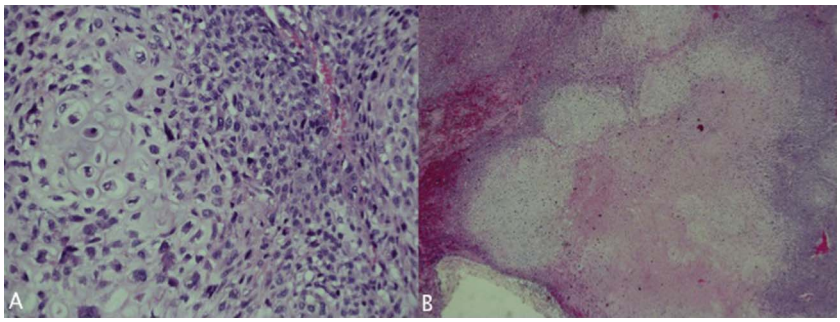

Fig. 4. (A) E & H 40x. Neoplastic condroid cells with atypical nuclei and simil-mixoid matrix. (B) E & H 10x. The tumour showed a central necrotic area; while the condroid area is associated with hypercellularity mixed with spotty haemorragic areas.

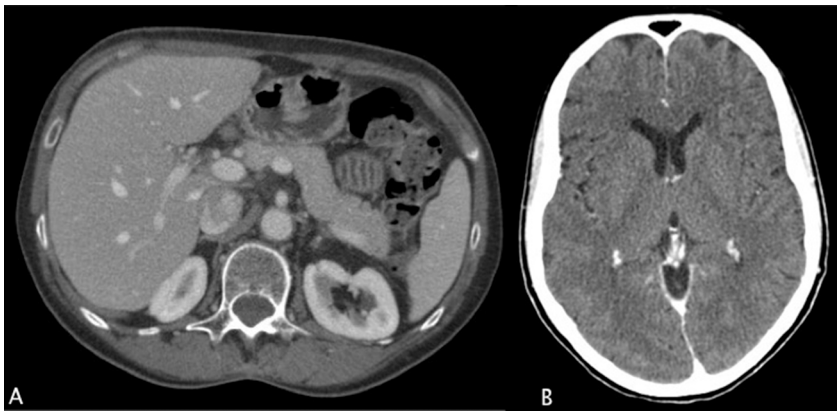

Fig. 5. (A,B) Abdominal and cranial i.v. contrast enhanced CT examination showed no evidence of distant metastasis.

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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