Six-year follow-up without recurrence after a carcinosarcoma of the breast: case report

R. Wernert[1], G. Yazbek[2], C. Voisin-Rigaud[3], G. Ducarme[4]

[1]Department of Surgical Oncology, [2]Department of Breast Medical Oncology, [3]Department of Pathology, Institut Jean Godinot, Reims
[4]Department of Obstetrics and Gynecology, Hôpital Beaujon, Assistance Publique-Hôpitaux de Paris (AP-HP), Université Paris 7, Clichy (France)

Summary

Carcinosarcoma (CS) of the breast is a rare entity (less than 0.2% of breast malignancies), characterized by the presence of a biphasic pattern of malignant epithelial and mesenchymal elements, and with a high risk of loco-regional recurrence. The diagnosis of CS of the breast is difficult and needs detailed histological investigations to differentiate it from other malignant breast tumors. Expertise and evidence-based information on optimal treatment is very limited due to the low incidence and inconsistent classification. The principles of treatment modalities seem to be similar to others breast malignancies. CS has a different biologic behavior from others breast cancers, being very aggressive in keeping with its high-grade mesenchymal stroma. Still many questions remain about its origin and optimal treatment modalities for better outcome. We report the case of CS of the breast without local or regional recurrence after six years of follow-up in an 82-year-old woman.

Key words: Breast tumors; Carcinosarcoma; Follow-up.

Introduction

Carcinosarcoma (CS) of the breast is a rare entity, occurring in less than 0.2% of breast malignancies. CS is characterized by the presence of a biphasic pattern of malignant epithelial and mesenchymal elements. Overall CS appears to have a poor prognosis with a high risk of loco-regional recurrence [1], most likely due to the fact that these lesions tend to be poorly differentiated tumors [2, 3].

Case Report

An 82-year-old Caucasian woman was referred with a right breast tumor which had enlarged rapidly in the previous three weeks. The patient had a significant personal history of hypertension, hypercholesterolemia, and two arterial bypasses for limb ischemia. No personal or familial cancer history was detected. Physical examination showed an irregularly mass (25 x 30 mm) in the upper outer quadrant of the right breast with limited adhesion to the skin. Mammography and ultrasonography (US) demonstrated a high-density mass with irregular margins and five right axillary lymph nodes. A modified radical mastectomy with axillary lymphadenectomy was performed.

The tumor was irregular measuring 30 x 27 mm, showing solid and lobulated features. Histology revealed a tumor composed of both carcinomatous (10%) and sarcomatous (90%) features, with a distinct demarcation between the two components. The sarcomatous areas showed pleomorphism with significant pleomorphic spindle cells with giant hyperchromatic nuclei, some multinucleate. Marked mitosis was seen, 25 mitoses per 10 high-power fields (HPF) in the carcinomatous component and 12 mitoses per HPF in sarcomatous component. The 19 axillary lymph nodes isolated were negative. Immunohistochemically, expression of cytokeratin and S-100 were diffusely positive in carcinomatous cells and negative for vimentin, while sarcomatous cells were only positive for vimentin. Estrogen and progesterone receptors and expression of the c-erbB2 were negative in both components. The diagnosis of CS of the breast was established, and the patient was classified pT2 N0 M0.

A pluridisciplinary medical staff including breast surgeon and medical oncologist decided on adjuvant chemotherapy, but due to the age and the Karnofsky score (50%) of the patient, no therapy was added to the surgical treatment. Six years after the diagnosis, clinical examination, mammography and US showed no local recurrence.

Discussion

CS of the breast is a rare tumor characterized by the presence of a biphasic pattern of malignant epithelial and mesenchymal elements. Most of the patients with CS are postmenopausal and white. The classical manifestation is a large mass with irregular margins in mammography [3]. The histogenesis of CS is controversial and has been debated and analyzed using a variety of approaches, including immunohistochemical analysis, ultrastructural studies, cell culture and transplantation to nude mice. A variety of terminology has been used to describe the various histological patterns that may be encountered. Wargotz and Norris [3] proposed a classification of the mixed epithelial mesenchymal tumors of the breast into three groups: matrix-producing carcinoma, spindle cell carcinoma, and CS. The term CS is reserved for when the demarcation between carcinomatous and sarcomatous components is distinct in all light microscopic fields. In 1998, Wada *et al*. [4] reported that immunohistochemical analysis supported the independent origin of the carcinomatous and sarcomatous components of the tumor. Although cytokeratin was only positive in the carcinomatous component, vimentin was strongly positive in the sarcomatous component of the tumor, but showed only patchy or very weak reactivity in carcinomatous compo-

Revised manuscript accepted for publication July 15, 2010

nent. They concluded that molecular analysis clearly showed that CS of the breast derived by divergent patterns of differentiation from a single totipotent stem cell.

Expertise and evidence-based information on optimal treatment is very limited due to the low incidence and inconsistent classification. The principles of treatment modalities seem to be similar to others breast malignancies. Treatment of choice is modified radical mastectomy with postoperative radiotherapy (locoregional control) and chemotherapy (metastatic spread control) [3, 5, 6]. The high risk of local recurrence should make oncologists consider whether breast-conserving surgery is the right option for patients, particularly with T2 and higher T stages [2, 3]. Although axillary node invasion is less common than in other metaplastic carcinomas of the same size, it frequently occurs in CS [2, 3, 6]. However, the number of invaded lymph nodes is often limited. In a recent retrospective study concerning all biphasic metaplastic sarcomatoid carcinomas of the breast in the Surveillance, Epidemiology and End-Results (SEER) database, Hennessy *et al*. [7] concluded that patients with these tumors may derive less benefit from conventional breast cancer chemotherapy. For Wargotz and Norris [3], postoperative radiotherapy and hormonal therapy do not seem to be effective in cases of CS, due to the low incidence of hormonal receptors in these tumors (around 10%). Overall carcinosarcomas appear to have a poor diagnosis related to the large tumor size, the advanced TNM stage, and most likely due to the fact that these lesions tend to be poorly differentiated tumors [6, 8, 9]. The recurrence rate is around 60% and tends to be regional in approximately one-third of the cases of CS [3, 6].

In conclusion, the diagnosis of carcinosarcoma of the breast is difficult and needs detailed histological investigations to differentiate it from other malignant breast tumors. CS has a different biologic behavior from others breast cancers, being very aggressive in keeping with its high-grade mesenchymal stroma. Still many questions remain about its origin and optimal treatment modalities for better outcome.

References

[1] Tokudome N., Sakamoto G., Sakai T., Sarumaru S., Okuyama N., Hori F. *et al*.: "A case of carcinosarcoma of the breast". *Breast Cancer,* 2005, *12,* 149.
[2] Cornette J., Tjalma W.A., Buytaert P.: "Biphasic sarcomatoid carcinoma or carcinosarcoma of the breast: prognosis and therapy". *Eur. J. Gynaecol. Oncol.,* 2005, *26*, 514.
[3] Wargotz E.S., Norris H.J.: "Metaplastic carcinoma of the breast. III. Carcinoma". *Cancer,* 1989, *64*, 1490.
[4] Wada H., Enomoto T., Tsujimoto M., Nomura T., Murata Y., Shroyer K.R.: "Carcinosarcoma of the breast: molecular-biological study for analysis of histogenesis". *Hum. Pathol.,* 1998, *29*, 1324.
[5] Gogas J., Kouskos E., Markopoulos C., Mantas D., Antonopoulou Z., Kontzoglou K. *et al*.: "Carcinosarcoma of the breast: report of two cases". *Eur. J. Gynaecol. Oncol.,* 2003, *24,* 93.
[6] Gutman H., Pollock R.E., Janjan N.A., Johnston D.A.: "Biologic distinctions and therapeutic implications of sarcomatoid metaplasia of epithelial carcinoma of the breast". *J. Am. Coll. Surg.,* 1995, *180,* 193.
[7] Hennessy B.T., Giordano S., Broglio K., Duan Z., Trent J., Buchholz T.A. *et al*.: "Biphasic metaplastic sarcomatoid carcinoma of the breast". *Ann. Oncol.,* 2006, *17,* 605.
[8] Aritas Y., Bedirli A., Karahan O.I., Okten T., Sakrak O., Ince O.: "Carcinosarcoma of the breast: clinicopathologic and radiologic findings in an unusual case". *Breast J.,* 2003, *9,* 323.
[9] Harris M., Persaud V.: "Carcinosarcoma of the breast". *J. Pathol.,* 1974, *112*, 99.

Address reprint requests to:
G. DUCARME, M.D.
Department of Obstetrics and Gynecology
Hôpital Beaujon
Assistance Publique-Hôpitaux de Paris (AP-HP)
100, Boulevard du Général Leclerc
92110 Clichy (France)
e-mail: guillaume.ducarme@bjn.aphp.fr