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Case report

A Case Report of Breast Angiosarcoma

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A B S T R A C T

Angiosarcoma is a rare disease of the breast with the reported incidence of only 0.04% of all breast malignancies. The etiology of angiosarcoma remains unknown. It occurs post-mastectomy, in association with chronic lymphedema (Stewart-Treves syndrome), or after radiotherapy. We present a patient with angiosarcoma which developed 12 years of the diagnosis of breast carcinoma and 8 years of the operative procedure and radiotherapy for disease recurrence. A small angiomatous lesion of a few mm in size, cytologically suspect of vascular tumor (hemangioma or hemangiopericytoma) and histopathologically verified to be an atypical vascular lesion, was detected two years before breast enlargement and cytologic and histologic diagnosis of angiosarcoma. The patient died 15 months of the diagnosis of angiosarcoma, after two tumor recurrences and intrathoracic cavity invasion.

Key words: *FNAC, angiosarcoma, breast*

Introduction

Malignant tumors of vascular origin are rare malignant soft tissue tumors occurring at various sites[1] as either a primary or secondary event. Primary angiosarcoma of the breast is an unusual tumor, accounting for 1 *per* 1700–2000 primary malignant tumors of this organ[2]. Angiosarcoma of breast skin and parenchyma is a rarely reported complication of irradiation for breast carcinoma[3]. The majority of angiosarcomas are high-grade tumors with a varying degree of nuclear atypia, hyperchromatic nuclei, large nucleoli, and frequent mitoses. Hemorrhage into the surrounding stroma is a common feature of high-grade angiosarcoma[4]. Fine needle aspiration, supported by ancillary techniques such as immunohistochemistry, enables cytologic diagnosis of angiosarcoma and differentiates it from a carcinoma recurrence[1]. Immunostaining for CD34 is the most frequently employed marker, along with CD31 as a more sensitive and specific antigen for endothelial differentiation[5]. Little data on the specificity of CD31 on cytologic material are available.

Case Report

Twelve years before, a 75-year-old patient had undergone quadrantectomy for a carcinoma detected in the upper lateral quadrant of her left breast. After three years, cancer recurred in the same breast, which was treated by partial operation followed by radiotherapy. Eight years after radiotherapy, a reddish angiomatous lesion of several millimeters in size occurred in the lower external quadrant of the same breast. Fine needle aspiration cytology (FNAC) revealed uniform mesenchymal cells, raising suspicion of vascular tumor (Figure 1a). Histopathology of the excised tissue indicated atypical vascular lesion (Figure 1b). Two years later, the patient developed

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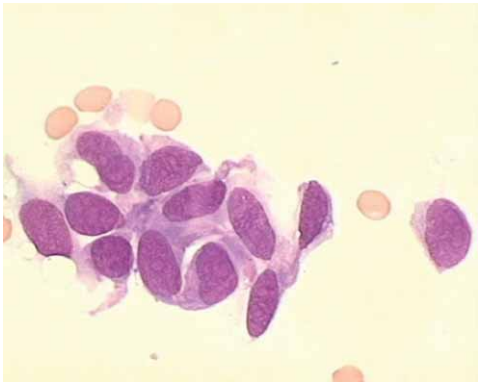
a)



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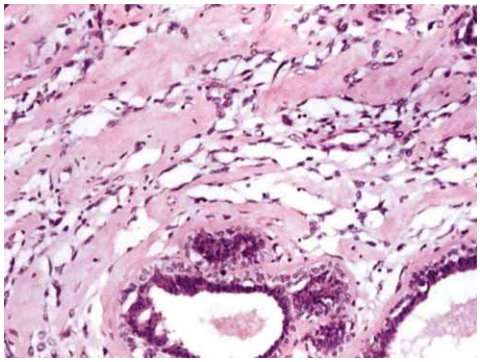

Fig. 1. a) Atypical post-irradiation vascular lesion: FNA cytology (May-Grünwald-Giemsa, x1000) and b) histopathology finding (hemalaun-eosin, x400).

abrupt enlargement, induration and thickening of the entire right breast, again with reddish angiomatous lesions of several millimeters in size on the skin. Mammography and ultrasonography findings were unspecific, only Doppler ultrasonography showed abnormal vascular flow. FNAC revealed strongly cellular smears with atypical pleomorphic mesenchymal cells (Figure 2a and b) with a high degree of DNA aneuploidy (Figure 2c), and intensive proliferative activity with a high degree of argyrophilic nucleolar organizer region (AgNOR) pleomorphism (Figure 2d). On immunocytochemistry, cells were positive for vimentin, CD34 (Figure 2e) and CD31 (Figure 2f). The diagnosis of angiosarcoma was made and histopathologically verified on intraoperative material obtained on total mammectomy (Figure 2g and h). Within a year, the patient was reoperated twice for the same tumor recurrences, followed by tumor invasion of the intrathoracic cavity. The patient died within 15 months of the diagnosis of angiosarcoma.

Discussion

Primary angiosarcoma of the breast is usually diagnosed in young women, at age 20–40, in contrast to mammary carcinoma that generally occurs at an older age[6]. This primary cancer develops as an ill-defined mass in the breast. Secondary angiosarcoma is often diagnosed in women over 40, five to ten years after radiotherapy for breast cancer. The American Cancer Society states that angiosarcoma is a very rare complication of breast irradiation[7]. With the general acceptance of lumpectomy, axillary staging, and radiotherapy as local treatment for infiltrating breast cancer, an appreciation is evolving for the spectrum of vascular lesions that occur in the mammary skin after this treatment. Most of these lesions develop within the prior irradiation field after breast conservation treatment[7]. There is usually a long latent period between radiotherapy and the diagnosis of angiosarcoma (median 59–90 months)[8]. Vesoulis and Cunliffe[3] report a case of subareolar epithelioid angiosarcoma arising eight years after lumpectomy and irradiation of the ipsilateral breast for infiltrating carcinoma. These data are consistent to our case. Angiosarcoma arising in the irradiated breast after breast-conserving therapy has been reported with increasing frequency[10]. As ever more women undergo breast-conserving therapy, the incidence can be expected to increase[11]. Radiographic assistance in reaching the diagnosis has been limited. Mammography may reveal skin thickening and/or an ill-defined superficial mass, but findings are often nonspecific. Nearly 33% of patients with breast angiosarcomas have negative mammograms[12]. In our patient, the mammography and ultrasonography findings were also nonspecific. Cytologic diagnosis of angiosarcoma was made preoperatively. However, some authors found preoperative diagnosis by aspiration cytology and biopsy to be rather difficult[13,14]. Chen et al. report on the biopsy false negative rate of 37%[15]. High grade angiosarcomas can be easily confused with other malignant tumors such as recurrent adenocarcinoma, lymphoma, melanoma, liposarcoma and other sarcomas. Low grade angiosarcomas can be easily confused with atypical vascular lesions (AVL), non-neoplastic lesions such as pseudoangiomatous stromal hyperplasia, and granulation tissue. FNAC and core biopsy may yield false negative results because the margins of angiosarcoma tend to have low-grade changes that may be indistinguishable from post-irradiation changes[16]. It is important to distinguish AVL from angiosarcoma. Longer follow up will be necessary to fully characterize the prognostic importance of atypical vascular lesions, but currently there is no evidence that they represent a precursor to irradiation-induced angiosarcoma[17]. Atypical vascular lesions at the skin margins of mastectomy may be predictive of recurrence after angiosarcoma resection[7]. In our patient, atypical post-irradiation vascular lesion was diagnosed by intraoperative biopsy cytology and histology a year before. Post-irradiation vascular tumors do not only present a therapeutic problem for clinicians, but also an increasing diagnostic dilemma for pathologists. The latter viewpoint is supported by the significant clinical and histologic overlap between the two tumors[18].

Conclusion

Most cases of breast angiosarcoma may develop as a complication of radical mastectomy for primary breast

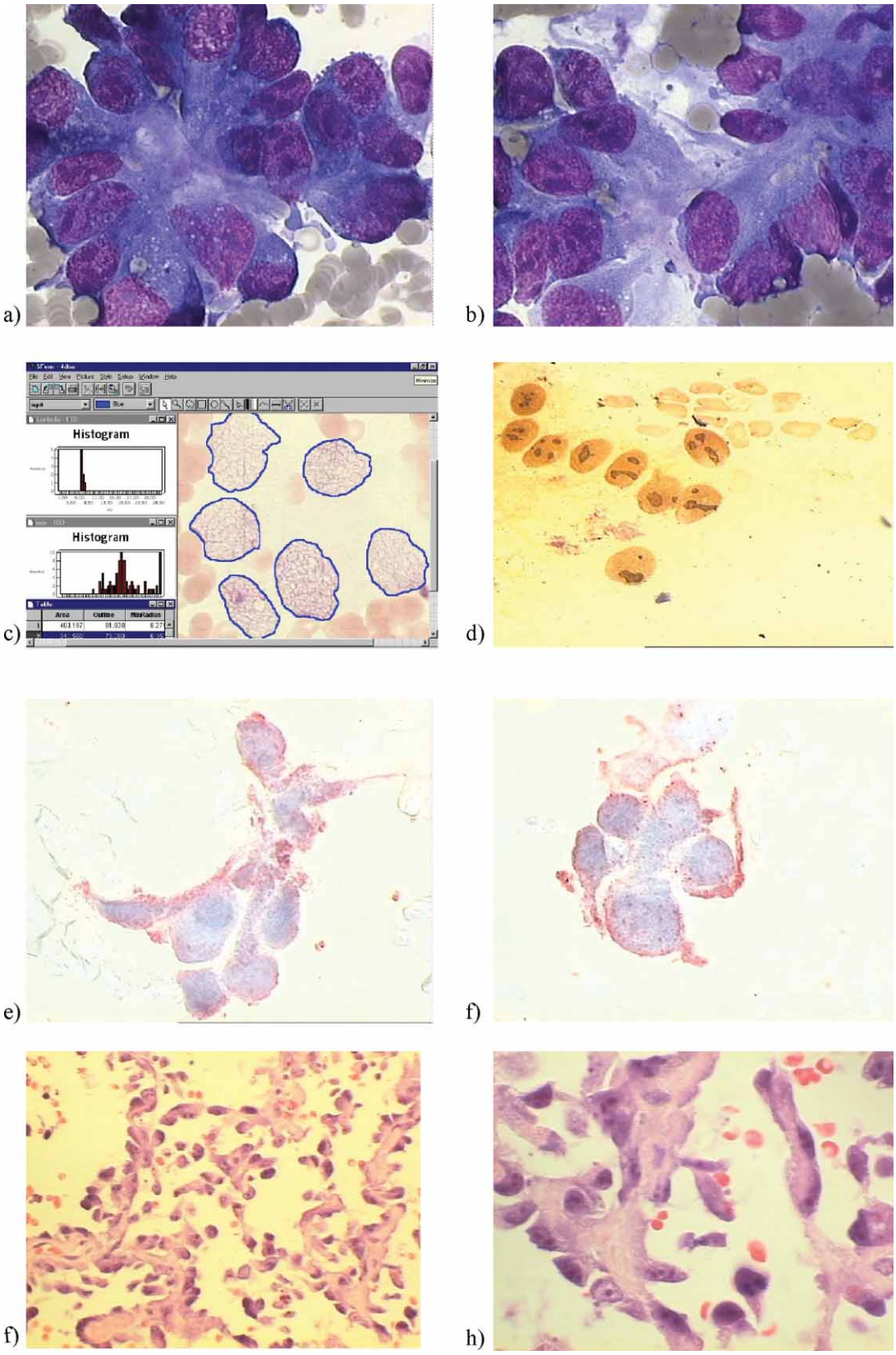

Fig. 2. Angiosarcoma: a and b) FNA cytology (May-Grünwald-Giemsa, x1000), c) DNA aneuploidy (Fulgen stain), d) nucleolar organizer region (AgNOR), e and f) cells immunostained for CD31 and CD34 (LSAB, x1000), g) histopathology (hemalaun-eosin, x100), and h) histopathology (hemalaun-eosin, x400).

cancer and chronic lymphedema present for many years (Stewart-Treves syndrome), irradiation-induced angiosarcoma after radiotherapy for cancer or preexisting benign lesions as atypical vascular lesions. The majority of angiosarcomas are high-grade tumors with difficult management decisions for this aggressive disease. Synchronizing and combining cytologic morphology with other sophisticated diagnostic procedures to reach an accurate diagnosis, subtyping and prognosis of this tumor is a true challenge indeed.

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PRIKAZ SLUČAJA ANGIOSARKOMA DOJKE

SAŽETAK

Angiosarkom je rijetka bolest dojke s opisanom incidencijom od svega 0,04% svih malignoma dojke. Etiologija je nepoznata, a javlja se u žena nakon mamektomije, udružena s kroničnim limfedemom (Stewart-Trevesov sindrome) ili nakon radijacije. Opisuje se slučaj bolesnice s angiosarkomom 12 godina nakon dijagnoze karcinoma dojke i 8 godina nakon operacijskog zahvata zbog recidiva i provedenog zračenja. Dvije godine prije povećanja cijele dojke te citološke i histološke dijagnoze angiosarkoma zabilježena je pojava sitne angiomatozne promjene od nekoliko mm s citološkom sumnjom na krvožilni tumor (hemangiom ili hemangiopericitom), dok je histopatološka analiza pokazala atipičnu vaskularnu leziju. Bolesnica umire 15 mjeseci od dijagnoze angiosarkoma nakon dva recidiva i prodora tumora u intratorakalnu šupljinu.