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OUTCOME AND PROGNOSTIC FACTORS OF PRIMARY BREAST SARCOMA: A RARE CANCER NETWORK STUDY

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**ABSTRACT BODY:**

**Purpose/Objective:** Primary sarcoma of the breast (PSB) is a rare entity accounting for less than 1% of all breast malignancies. Treatment strategies are generally built mainly on the histologic features reported in small retrospective studies. Generally, surgical resection is the primary treatment for PBS. The role of radiation therapy (RT) and chemotherapy is not clear.

**Materials/Methods:** Data from 99 patients with PSB treated between 1976 and 2003 were collected. Median age was 54 years (13-86). Median tumor size was 4.5 cm (1-11 cm). There were fibrosarcoma in 12 patients, angiosarcoma in 42, malignant fibrous histiocytoma in 14, liposarcoma in 7, osteogenic sarcoma in 2, and other types in 20. Tumor necrosis, cellular pleomorphism, and vascular invasion were observed respectively in 47%, 70%, and 32% of the specimen. Histologic grade included grade 1 tumors in 17 patients, grade 2 in 19, and grade 3 in 32. Axillary dissection was performed in 38 patients. Nodal involvement was detected only in 4 cases. Therapeutic strategy consisted of neoadjuvant chemotherapy followed by locoregional treatment in 19 patients, surgery alone in 38, and conservative surgery followed by RT in 30 patients. Surgery consisted of wide excision in 32, and mastectomy in 65 cases. Clear margins were obtained in 60 patients. Among the 20 patients who had close or positive margins, 15 (75%) had a secondary surgery. RT was implemented in 47 patients (50 Gy in 25 fr.). Nine patients had supraclavicular, and 5 mammary nodal irradiation at a dose of 40-50 Gy. Four patients received 45-50 Gy to the axilla. A boost of 6.5-16 Gy was delivered to the tumor bed in 18 patients. Chemotherapy was administered before or after surgery in 9 and 10 cases, respectively.

**Results:** At the end of treatment, 8 patients had a residual tumor (microscopic in 5); 85 were in complete response (CR), and one patient developed bone metastases. After a median follow-up of 64 months, 38 patients presented a local relapse salvaged by surgery in 22 cases, and 37 patients developed lung and bone metastases. The 5- and 10-year disease-free survival (DFS) were 38% (+/- 5) and 31% (+/- 5), overall survival (OS) 52% (+/- 6) and 51% (+/- 6), and 5- and loco-regional relapse rate (LRR) were 46% (+/- 6) and 54% (+/- 7), respectively. Univariate analyses are shown in the Table. Multivariate analysis revealed four favorable independent prognostic factors for local control: CR after treatment, no cellular pleomorphism/degeneration, histology other than angiosarcoma, and no menopause. For the DFS, the four favorable independent factors were absence of tumor necrosis, CR after treatment, no menopause, and histology other than angiosarcoma.

**Conclusions:** Angiosarcoma has a very bad prognosis despite aggressive therapy. This multicenter study demonstrated that the control of this rare disease after treatment is paramount of importance in order to increase local control and survival. The outcome can also depend on histologic parameters such as tumor necrosis or cellular pleomorphism.

Parameters	10-year LRR	p-value	10-year DFS	p-value
Age (<=54 vs. >54)	47% vs. 68%	0.17	41% vs. 18%	0.004
Menopause (yes vs. no)	68% vs. 42%	0.05	22% vs. 44%	0.02
Tumor size (<=4.5 vs. >4.5 cm)	42% vs. 58%	0.96	63% vs. 68%	0.27
Histology (angiosarcoma vs. others)	84% vs. 35%	0.002	10% vs. 46%	0.002
Grade (1+2 vs. 3)	49% vs. 62%	0.02	47% vs. 20%	0.02
Tumor necrosis (yes vs. no)	56% vs. 50%	0.10	21% vs. 39%	0.003
Cellular pleomorphism/degeneration (yes vs. no)	62% vs. 30%	0.09	23% vs. 53%	0.005
Number of mitosis (<=19 vs. >19)	47% vs. 67%	0.22	35% vs. 23%	0.68
Vascular invasion (yes vs. no)	69% vs. 48%	0.01	19% vs. 37%	0.01
Residual tumor (yes vs. no)	0% vs. 49%	0.01	36% vs. 0%	0.01
CR after treatment (yes vs. no)	0% vs. 54%	0.03	36% vs. 0%	0.001
Clear margins (yes vs. no)	40% vs. 35%	0.56	34% vs. 24%	0.54
Surgery (wide excision vs. mastectomy)	77% vs. 46%	0.09	27% vs. 35%	0.33
RT (yes vs. no)	40% vs. 61%	0.44	36% vs. 25%	0.36

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