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# A Rare Case of a Recidiving Radio-Induced Breast Angiosarcome

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**Abstract**

***The breast angiosarcoma is a rare but dreadful complication of radiation therapy. It has a very poor prognosis due to the frequent occurrence of visceral metastases and rapid recurrence. In this article, we report the case of a breast angiosarcoma occurring four years after conservative treatment of breast cancer and then recurring on a mastectomy scar. We will discuss the etiopathogenesis of this tumor and their clinical and therapeutic aspects.***

***Keywords:*** ***Angiosarcoma; Breast; Radiotherapy; Radio-induced tumor; Recidiving; Mastectomy.***

## 1. Introduction

Angiosarcomas (AS) are rare tumors, accounting for about 1% of soft tissue sarcomas. They can occur in almost any anatomical site, especially deep soft tissue, breast, viscera and bone [1].

Breast angiosarcoma is a rare tumor representing 0.04% of all malignant breast tumors and 8 to 10% of breast sarcomas [2]. There are two categories: primary AS, occurring in the breast parenchyma, and secondary AS, which usually develops in the skin, or sometimes in the chest wall or breast parenchyma after surgery and radiation therapy for breast cancer. It is generally manifested by a polymorphic clinical picture, often confusing, which is a source of diagnostic delay. Its diagnosis is histological and based on a rigorous analysis of the pieces of excision [3]. It is characterized by a strong malignancy, the evolution of which is towards rapid recurrence and the appearance of visceral metastases [2]. Our goal, in reporting a case of recurrent breast angiosarcoma, is to highlight the rarity of this aggressive tumor, its diagnostic difficulty and its therapeutic management.

## 2. Observation

This is a 70-year-old patient, married and mother of three children, menopausal 18 years ago. Her history was marked by an infiltrating ductal carcinoma (T1N0) of the infero-external quadrant of the left breast for which she had

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conservative surgical treatment (lumpectomy and axillary lymph node dissection) in January 2014. On anatomopathological examination: invasive ductal carcinoma, SBRII, with healthy limits, presence of 0N + / 15N vascular embolism, luminal B type. radiotherapy (50 Gy on the mammary gland with an overprint of 10 Gy on the tumor bed). The patient was followed up regularly.

Four years after the radiosurgical treatment, the patient consulted because of the appearance of an irradiated breast lesion. The clinical examination found an ulcerative budding lesion of the 2.5 cm IQE. A biopsy was performed on 11/19/2018 with an anatomopathological examination: appearance of an ulcerated angiosarcoma infiltrating the dermis. In February 2019, the patient underwent a left mastectomy, the histological analysis of which confirmed the diagnosis of angiosarcoma, showing a sarcomatous proliferation which ulcers the skin next to it and measures 10 cm of long axis with healthy limits. The extension assessment did not find any secondary tumor locations.

The postoperative course was marked by the appearance three months later of a nodule opposite the scar of the left mastectomy. The clinical examination revealed a 2.5 cm nodule on the internal side of the mastectomy scar of a cystized nodule with a purplish angiomatous appearance of the skin next to it (Fig. 1) with free lymph nodes.

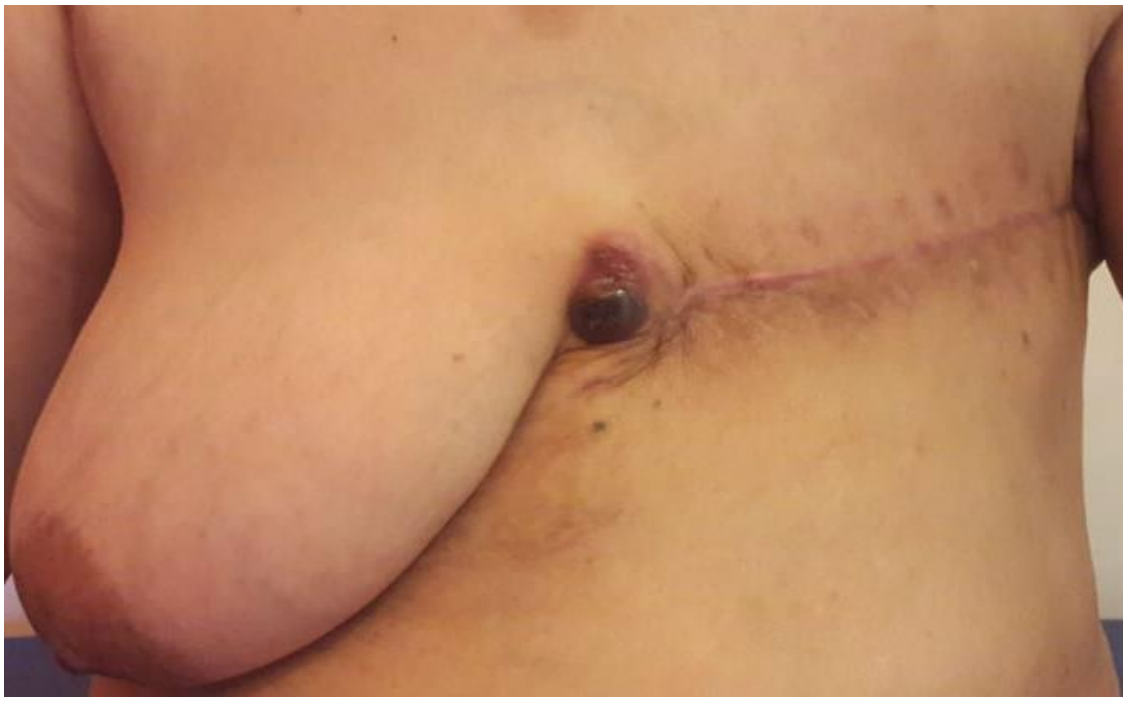

**Fig. 1.** Clinical aspect of recurrent breast angiosarcoma on the internal side of the mastectomy scar.

The mammographic ultrasound had objectified the presence opposite the internal part of the left operative scar of a nodule of 17.4x8.5mm partially cystic with fuzzy limits. (Fig. 2).

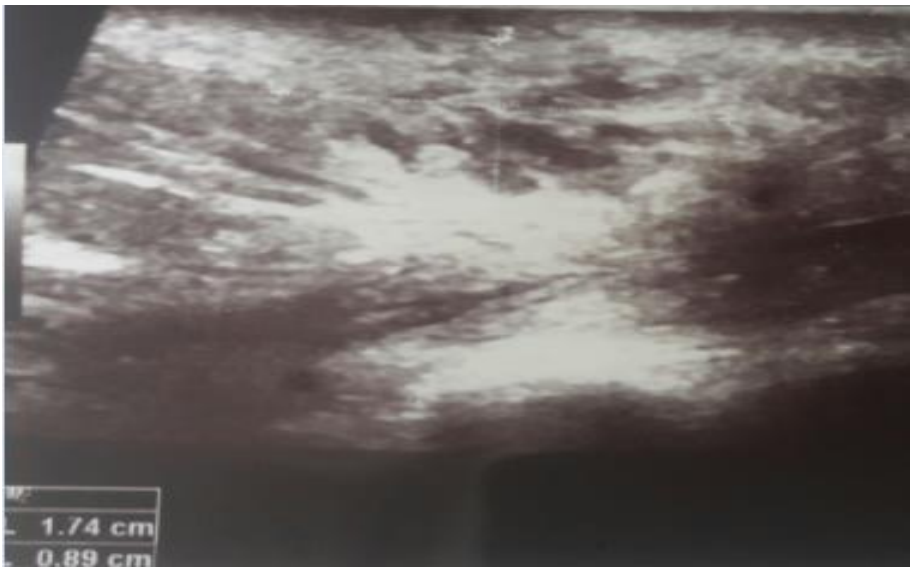


**Fig. 2.** Presence opposite the internal part of the left operative scar of a 17.4x8.5mm nodule partially cystic with fuzzy limits.

She had benefited on 06/28/2019 from a broad excision of the nodule, the anatomopathological study of which revealed a proliferation of vascular fusocellular tumors compatible with a recurrence of known angiosarcoma, measuring 2.5 cm long axis with healthy limits.

## 3. Discussion

Angiosarcoma of the breast is a very rare conjunctival tumor. It is a primary malignant proliferation of endothelial cells of the vascular tissue of the gland [4]. It presents 2 primary forms without known precursor, and a secondary form after irradiation of the breast.

Secondary AS is an exceptional complication of conservative radiosurgical treatment for breast carcinomas [2]. It is of interest to elderly women with an average age of 69 years [5]. Its incidence has increased over the past thirty years, which reflects the more common trend for breast-conserving surgery followed by postoperative radiation [6].

These radio-induced angiosarcomas typically occur at the edge of the radiation field (remaining chest wall skin or residual breast parenchyma) [7], are usually cutaneous but may develop in the remaining breast parenchyma [8].

It presents clinically in the form of erythematous plaques, patches or purplish nodules, often associated with edema. These are often multifocal lesions. The time interval between radiotherapy and the onset of SA is on average 5 to 6 years, but some cases have been observed earlier (6 months — 2 years after radiotherapy) (2). This delay is shorter than for other radio-induced sarcomas [1,9].

The diagnostic criteria conventionally used to retain the diagnosis of sarcoma developed in irradiated territory are four in number:

- The existence of a history of irradiation,
- A latency period of at least five years,
- A histology of sarcoma different from that of the primary tumor and
- Its location in the irradiated volume. These criteria proposed by Cahan et al. were later amended by Arlen et al., which reduced the lag time to 3 years [10-12]. Our observation met these diagnostic criteria.

Its clinical, radiological and histological diagnosis is often difficult. Cytology remains disappointing. The diagnosis of certainty is histological. However, he faces diagnostic difficulties, especially on biopsies. It must be worn on the whole tumor [2] Secondary AS differs little macroscopically and histologically from primary AS, apart from its more frequent cutaneous localization and a higher proportion of poorly differentiated and epithelioid forms [13]. The diagnostic criteria conventionally used to retain the diagnosis of sarcoma developed in irradiated territory are four in number: the existence of a history of irradiation, a latency period of at least five years, a histology of sarcoma different from that of the primary tumor and its location in the irradiated volume. These criteria proposed by Cahan et al. were later amended by Arlen et al., which reduced the lag time to 3 years [13,14]. Surgery is the gold standard treatment for radio-induced ASM (15,16). Broad surgical excision is necessary [17]. The place of adjuvant treatments remains limited in the treatment of post-radiation ASM. To date, neither radiotherapy nor chemotherapy has proven effective [15.18]. The majority of authors report the unfavorable prognosis for angiosarcomas [19,20]. Recurrences are observed in 77% of cases and after an average delay of 12.8 months (17). Metastases are mainly done by the hematogenous way whereas the attacks lymph nodes are rare [15]. The most frequently invaded organs are the lung, contralateral breast and bone [21].

## 4. Conclusion

Radiation-induced breast angiosarcoma represents a rare but formidable complication of radiotherapy in the context of breast cancer. Its diagnosis can be difficult in front of atypical signs, but any suspicion must, in this context, lead to a histological examination. The biopsy must therefore be carried out at the slightest doubt and entrusted to an anatomopathologist informed of the diagnostic suspicion. Early diagnosis remains the main prognostic factor for performing a potentially curative radical mastectomy.

### Declaration of interests

The authors declare that they have no conflicts of interest in connection with this article.

### Author contributions

All the authors have read and approved the final version of the manuscript.

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