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Review Article

Therapeutic Response of Congolese Patients Treated with Radiotherapy Abroad for Breast Cancer

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Abstract

Breast cancer is the leading cancer in women in Congo. Its management requires the use of radiotherapy after surgery. Radiotherapy is always indicated after conservative surgery for invasive or intraductal breast cancer. However, after radical surgery such as a mastectomy, the indication for radiotherapy depends on certain factors with poor prognosis.

The current unavailability of radiotherapy in Congo forces patients followed at the University Hospital of Brazzaville to travel abroad to benefit from this type of treatment, which is essential for the management of breast cancer.

After radiotherapy, monitoring is an important step because it allows us to assess the therapeutic response and to reassure patients of the possibility of complete remission or cure. This monitoring after radiotherapy is clinical, biological and radiological.

We thought it would be appropriate to take stock of patients treated with radiotherapy abroad for breast cancer.

Keywords: Therapeutic Response; Radiotherapy; Cancer; Breast; Foreign

Introduction

Breast cancer is the leading cancer in women in Congo. Its management requires the use of radiotherapy after surgery. Radiotherapy is always indicated after conservative surgery for invasive or intraductal breast cancer. However, after radical surgery such as mastectomy, the indication for radiotherapy depends on certain factors with poor prognosis, including tumor size, lymph node involvement, excision limits, vascular embolus, etc. [1,2]. Radiotherapy in breast cancer reduces the frequency of local recurrences, thus ensuring locoregional control of the disease, increasing survival and improving the quality of life of patients [1].

The current unavailability of radiotherapy in Congo forces patients followed at the University Hospital of Brazzaville to travel abroad to benefit from this type of treatment, which is essential for the management of breast cancer.

After radiotherapy, monitoring is an important step because it allows us to assess the therapeutic response and to reassure patients of the possibility of complete remission or cure. This monitoring after radiotherapy is clinical, biological and radiological.

We thought it would be appropriate to take stock of patients treated with radiotherapy abroad for breast cancer.

Patients and Methods

We undertook a descriptive retrospective study in the radiotherapy, medical oncology and gynecology departments of the Brazzaville University Hospital (CHUB), between January 2018 and December 2022.

To be included in the study, patients had to meet the following criteria: ° Have histological confirmation of the diagnosis of breast cancer;

- Have benefited from radiotherapy treatment abroad;
- Have a medical report confirming the effectiveness of the radiotherapy treatment;
- Have the biological and medical imaging tests requested during the check-ups.

The patients were referred for radiotherapy by the medical oncology and gynecology-obstetrics departments of the Brazzaville University Hospital.

All patients had received radiotherapy abroad and had a medical report signed by a radiation oncologist.

Patients were treated with particle accelerators in Kinshasa in the DRC, Bamako in Mali, Rabat and Casablanca in Morocco and Paris in France. The radiotherapy received was of the conformal type with or without intensity modulation (IMRT or MRI). The irradiation technique consisted of placing the patients in the supine position, on an inclined plane in order to bring the presternal region horizontally. The arm on the affected side was placed in abduction at 90° and held by an armrest and the patient's head tilted on the side opposite to the treated breast.

Patients who had undergone a mastectomy were irradiated to the chest wall, while those who had undergone conservative surgery were irradiated to the affected breast with or without a boost to the tumor bed. Some patients had received the total dose of 50 grays in 25 sessions at a rate of 2 grays per fraction by two tangential bundles on the chest wall of the affected side including the operative scar, with or without irradiation to the supraclavicular or axillary lymph node areas; Patients who had benefited from breast preservation had received a boost (additional irradiation) of 10 to 16 grays on the tumor bed.

Other patients, on the other hand, had received by hypofractionation the dose of 42 grays in 15 sessions at a rate of 2.8 grays per fraction with simultaneous integrated boost on the tumor bed.

After irradiation, patients will be seen by the radiation oncologist every three months for two years, then every six months for three years, and finally annually after five years of follow-up. Monitoring is clinical, biological and radiological.

On the clinical level, it is a question of looking for signs of a possible local recurrence of the breast or chest wall, axillary or supraclavicular lymph node involvement, a new suspicious lesion of recent appearance, but also to detect and treat the appearance of acute and especially late side effects of radiotherapy.

From a biological point of view, monitoring consists of carefully monitoring the kinetics of the values of certain tumor markers, in particular CA15-3 once a quarter, even if it has become optional at present, and is now only required in the event of clinical suspicion of disease progression.

Radiologically, the examinations are not systematic. In the event of warning signs and depending on the suspected organ, a CT scan and/or magnetic resonance imaging (MRI) and/or a bone scan and/or a PET scan may be requested. In our context where all these examinations are not available, we often limit ourselves to performing standard X-rays and ultrasounds of organs, at best a CT scan and an MRI. However, in the case of breast preservation, a mammogram coupled with bilateral breast ultrasound is recommended once a year.

In general, the first examinations after radiotherapy for breast cancer will be carried out at least three months after the end of radiotherapy.

The Graph pad Prism 5 software was used to calculate the spread and to compare our data with those in the literature.

Results

During the five-year study period from 2018 to 2022, we collected 92 patients treated with radiotherapy abroad for breast cancer. The mean age was 51 years for extremes ranging from 26 to 69 years.

The most common histological type was non-specific invasive carcinoma. Patients were classified according to the TNM classification (Table 1).

Age groups (years)	T2N1M0	T2N2M0	T3N2M0	T4aN1M0	T4bN2M0	Total
20 - 30	4	4	3	1		12
31 - 40	12	6	7		4	29
41 - 50	20	5	3	3		31
51 - 60	4	5			3	12
61 - 70	2		3	2	1	8
Total	42	20	16	6	8	92

Table 1: Distribution of patients by age and TNM stage.

Acute side effects were observed in 56 patients, while late side effects occurring beyond six months after radiotherapy were observed in 32 patients.

The different types of side effects observed during monitoring are illustrated in Figure 1 and Figure 2 and the therapeutic response observed and the examinations performed during monitoring are illustrated in Figures 3 and 4.

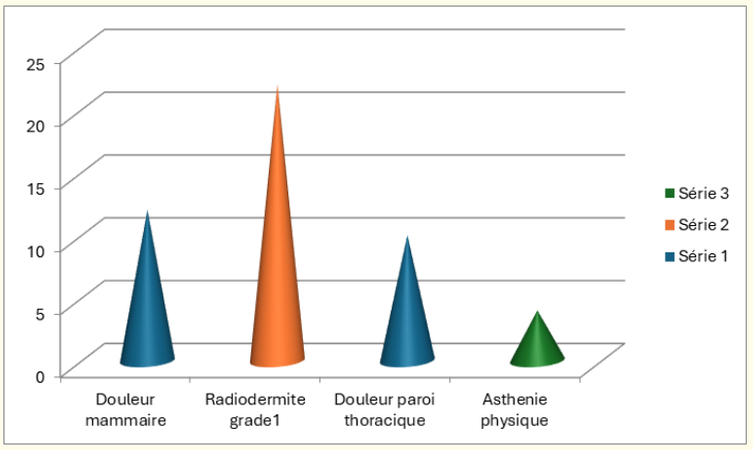

Figure 1: Acute side effects during monitoring.

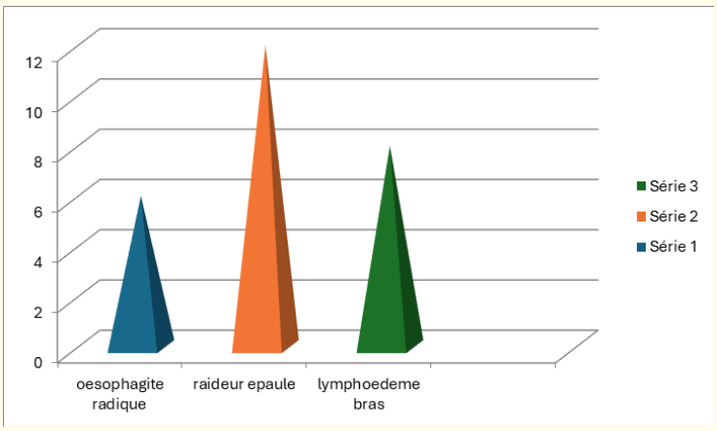

Figure 2: Late side effects during monitoring.

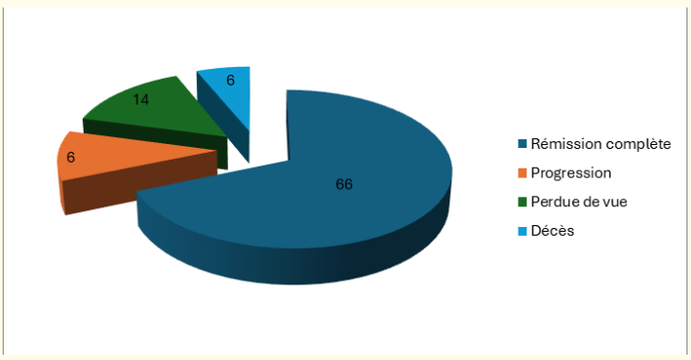

Figure 3: Therapeutic response observed during monitoring.

Examinations conducted during surveillance

IRM	SCANNER	MAMMO SPELLIN G	ULTRASOUND	BONE SCINTIGRAPHY	PET SCAN
4	12	11	42	6	1

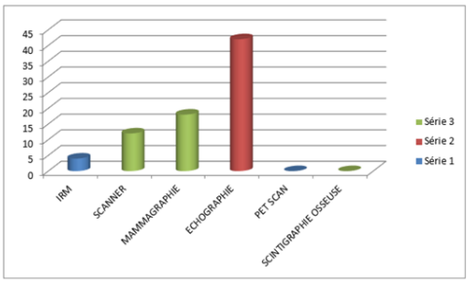

Figure 4: Different reviews conducted during surveillance.

Discussion

The therapeutic response after radiotherapy for breast cancer depends on the time between surgery and postoperative irradiation, the total dose delivered homogeneously to the tumour, the protection of neighbouring organs and the radiotherapy technique used. The time to onset of secondary lesions depends solely on the lifespan of mature cells. The duration of functional recovery is determined by the severity of stem cell depletion, which in turn results from the dose received [1,2].

Acute reactions appear in rapidly changing tissues such as the skin. If the radiation dose is high enough to kill all stem cells, cell regeneration depends on the ability of stem cells to migrate from adjacent non-irradiated tissue regions. In this case, the volume or surface irradiated influences the severity and duration of acute toxicities. Healing occurs by re-epithelialization from the islands of surviving cells of the basal layer. Early lesions of the epidermis are not very dependent on the dose per session but are strongly influenced by spreading because of cell repopulation. Treatment of acute side effects depends on the grade or extent of the injury. Thus, for grade 1 and 2 lesions, the application of aqueous Eosin is recommended after the radiotherapy session and then in the evening at bedtime. All of the patients irradiated in our series who experienced acute side effects were treated with aqueous Eosin [11]. Apart from complications directly related to surgery (seroma, scarring superinfection) or radiotherapy (radiodermatitis), two particular chronic situations are frequent, in particular: - parietal or breast pain - lymphedema of the arm is less frequent since the use of routine of the sentinel lymph node technique often allowing for postponement of an axillary dissection. The therapeutic means remain disappointing: lymphatic drainage and wearing a compression sleeve are the only proposals to offer. Patients should avoid trauma (including tension and blood tapping) to the arm that could precipitate lymphedema [18,20].

The acquisition of a linear accelerator to replace the cobaltherapy device at the University Hospital of Brazzaville will certainly minimize the acute toxicities observed in our patients and improve the quality of life of our irradiated patients. The advent of linear accelerators has made it possible to significantly improve the treatment of breast cancer by radiotherapy. Indeed, the most common technique is the use of the two opposite tangential beams [1]. With the cobaltherapy device, the two beams are treated in DSP (distance from the source to the skin), the center being different for each of these beams. However, with a particle accelerator, a single center is used for both beams (this is called an isocentric technique). This technique has a lot of advantages in terms of precision (the two beams are treated one after the other) and time saving (patient stays less time on the machine table during sessions). Secondly, new techniques minimise the side effects usually seen with cobaltherapy [1]. It should be noted that even with new technologies, radio-epithelitis as side effects are noted. These effects disappear after three weeks after application of a local treatment.

Monitoring patients treated for radiation therapy is an important step in the process that leads to complete remission or cure. It is based on clinical, biology and medical imaging.

At the clinical level, it is a question of looking for signs of a possible local recurrence of the breast or chest wall, axillary or supraclavicular lymph node involvement, a new suspicious lesion of recent appearance, but also to detect and treat the appearance of acute and especially late side effects of radiotherapy [18,21].

From a biological point of view, optional monitoring consists of carefully monitoring the kinetics of the values of certain tumor markers, in particular CA15-3, annually, and is now only required in the event of clinical suspicion of disease progression.

Radiologically, the examinations are not systematic either.

In the event of warning signs and depending on the suspected organ, a CT scan and/or magnetic resonance imaging (MRI) and/or a bone scan and/or a PET scan may be requested. In our context, where all these examinations are not available, we often limit ourselves to performing standard X-rays and ultrasounds of organs.

In general, examinations after radiotherapy for breast cancer will be carried out at least three months after the end of radiotherapy and then according to the standard schedule of radiotherapy follow-up.

Conclusion

After radiotherapy for breast cancer, monitoring, which is a crucial period of follow-up for patients, allows us to assess the therapeutic response of patients.

The acquisition of a radiotherapy machine at the University Hospital of Brazzaville will significantly reduce the frequency of medical evacuations and improve the quality of life of breast cancer patients.

The appearance of symptoms within the intervals of consultations requires rapid management, possibly supplemented by biological and/or radiological investigations in order to allow early detection of recurrence and the introduction of therapy.

Summary

Breast cancer is the first female cancer in the Congo. Its management requires the use of radiotherapy after surgery. Radiotherapy is systematically indicated after conservative surgery for invasive or intra-ductal breast cancer. However, after radical surgery such as mastectomy, the indication for radiotherapy depends on certain poor prognostic factors.

The current unavailability of radiotherapy in Congo forces patients followed at the University Hospital Center of Brazzaville to travel abroad to benefit from this type of treatment, which is essential for the management of breast cancer. After radiotherapy, monitoring is an important step because it makes it possible to assess the therapeutic response and reassure patients of the possibility of complete remission or cure. This monitoring after radiotherapy is clinical, biological and radiological.

We thought it appropriate to take stock of the patients treated by radiotherapy abroad for breast cancer.

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