Hypo-fractionated radiotherapy: a technical and societal innovation in the treatment of breast cancer.

Abstract: Adjuvant radiotherapy is a key element in the treatment of early breast cancer.

In recent years, there has been a growing trend towards hypofractionated external radiotherapy regimens.

Many have been shown to be equivalent to the standard regimen in terms of tumour control and cosmetic results, while improving patients' quality of life.

This paper provides an update on the main rationales for the use of hypofractionated radiotherapy in breast cancer, and reviews the bulk of the literature that has concluded that hypofractionated radiotherapy is effective and safe.

We examine various hypofractionation regimens used in our Mohammed VI Centre for the treatment of cancers, aiming at care centred on the quality of life of our patients while improving their productivity at home and at work in order to facilitate their social reintegration in the face of the disease.

We retrospectively analysed all patients treated in our department using the Fast Forward protocol and other hypofractionated regimens after the original publication was published and after an institutional consensus had been reached regarding the selection of patients with breast cancer without indication for lymph node irradiation.

Patients were selected between January 2021 and December 2024 at the Mohammed VI Cancer Treatment Centre.

The median age of the patients was 53 years. Invasive ductal carcinoma was the most common histological type (90%). Lumpectomy was performed in 19 patients. The preferred site was the left breast.

All patients were treated using modern conformal techniques with coverage of the predicted target volume of between 95 and 100%.

Treatment toxicity was assessed in the short, medium and long term in accordance with world standards. Today, 70% of our patients are still active in their social and professional lives, and 80% of them are mothers.

At present, we are joining the growing body of scientific evidence in making hypo-fractionated radiotherapy the therapeutic standard for the irradiation of early breast cancer.

With fewer fractions of treatment and more fractions of life for our patients, hypofractionated radiotherapy is an example of a care pathway that aims to deploy effective strategies for de-escalating the therapeutic burden and reducing the after-effects of cancer treatment.

keywords: External beam radiotherapy ,Hypofractionated radiotherapy, breast cancer, patient-centred care, quality of life.

Introduction:

Adjuvant radiotherapy is a key element in the treatment of early breast cancer.

In recent years, there has been a growing trend towards hypofractionated external beam radiotherapy regimens.

Many have been shown to be equivalent to the standard regimen in terms of tumour control and cosmetic results, while improving patients' quality of life.

Materials and methods:

This is a retrospective analytical study: We are examining various hypofractionation regimens in the treatment of early breast cancer, used in our Mohammed VI Center for Cancer Treatment, aiming at care focused on the quality of life of our patients while improving their productivity at home, at work in order to facilitate their social reintegration in the face of the disease.

Two questionnaires were carried out with the 25 patients treated and the care team: 30 doctors and radiotherapy machine technicians.

Patient files were selected between January 2021 and December 2024 at the Mohammed VI Cancer Treatment Center.

Results:

The median age of the patients was 53 years. Invasive ductal carcinoma was the most common histological type (90%), with stages limited to pT1-T2 N0 M0.

Tumorectomy, or any other conservative surgery was performed in 19 patients.

The preferred site was the left breast.

All patients received radiation to the breast alone at a total dose of 26 Gy in five fractions of 5.2 Gray, in accordance with the Fast Forward protocol. All patients were seen in consultation and treated for the first fraction on Monday.

The blocked inspiration technique was systematically proposed. The end-of-treatment consultation took place on Friday (after five sessions).

All patients were treated using modern intensity-modulated conformal techniques, with coverage of the predicted target volume of between 95 and 100%.

Treatment toxicity was assessed in the short, medium and long term in accordance with world standards. There was only one case of Grade I radiodermatitis in the short term.

Today, 70% of our patients are still active in their social and professional environment, and 80% of them are mothers. The adapted hypofractionated treatment regime has enabled our patients to remain independent both at home and at work.

For patients who live a long way from the hospital, it has reduced travel costs and the cost of a long stay compared with the conventional regime.

We also found that One Week Radiotherapy was very well tolerated, marking the end of a long battle after the heavy impact of chemotherapy and surgery.

The thirty professionals questioned, including radiotherapists and specialised technicians, all agreed on the numerous advantages of hypofractionated radiotherapy, reducing the problems of managing the reproducibility of treatment positions, increasing the number of patients recruited to the machine, with better tolerance of the treatment and fewer undesirable effects, with local control and efficacy superimposable on the conventional regime.

Discussion:

Doctors in the UK's FAST group have shown that it is possible, in patients with no risk of recurrence, to reduce the protocol to 5 weeks, with one session per week.

explains the radiotherapy oncologist. She and her colleagues studied this approach and further concentrated treatment time with a schedule of 5 sessions over 1 week. In their 'FAST Forward' study, published in 2020, the Curie researchers presented data comparable to the 15-session, 3-week protocol, with a 5-year follow-up(1).

In practice, we administer a slightly higher dose at each session than with the conventional hypo-fractionated regimen, but the total dose of radiation, accumulated over the 5 sessions, is lower.

Explains Youlia Kirova. With 5 years' hindsight, this irradiation regimen, known as 'FAST Forward', showed equal efficacy to hypo-fractionation in 15 fractions and 3 weeks in a controlled phase III study involving more than 4,000 patients (1). The aim of this approach is to maintain the same therapeutic result while reducing the impact of treatment on patients' lives.

For the moment, this protocol is aimed at patients aged over 70, with no high risk of recurrence. They lead active lives, look after their grandchildren... It's a real benefit for them to be able to be treated in just one week.

These patients are treated with radiotherapy after breast-conserving surgery. Only patients without lymph node involvement can benefit from this extreme hypo-fractionation regime.

The Institut Curie is a pioneer in this field, and the results of the first patients to be treated have already been published (2).

Breast cancer is one of the most prevalent diseases in women. Prevention and treatments have lowered mortality; nevertheless, the impact of the diagnosis and treatment continue to impact all aspects of patients' lives (physical, emotional, cognitive, social, and spiritual) (3).

Supporting and accompanying breast cancer patients throughout this process requires a deep understanding of their experiences. To describe the patient's experiences, including thoughts, emotions, feelings, worries, and concerns, the phrase "patient voice" has been used, which is becoming increasingly common in healthcare (4).

The women diagnosed with breast cancer describe the journey as a process tremendously affected by the different medical stages. Each stage has its own characteristics that condition the experiences, unleashing specific physical, emotional, cognitive, and social processes. Addi tionally, the patients perceive this entire process as pre-established journey they must under take to save their life, with its protocols based on the type and stage of cancer(3).

Our work is in line with all this scientific evidence, and its aim is to highlight the benefits of reducing the burden of radiotherapy or any other stage in this long process, while ensuring its therapeutic effectiveness.

Conclusion:

We are joining the growing body of scientific evidence in making hypofractionated radiotherapy the therapeutic standard for the irradiation of early breast cancer: **Fewer treatment fractions, more fractions of life for our patients.**

Hypofractionated radiotherapy is an example of a care pathway designed to deploy effective strategies for de-escalating the therapeutic burden for our patients.

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