The search for excellence in the healthcare giving services makes the creation of quality indicators necessary. One of the indicators to improve the quality in radiotherapy services is the global treatment time.

Radiotherapy’s aim is to eliminate cancer cells while preserving as much as possible the integrity and function of normal tissue. In most treatments, the conventional fractionation is used, administering 5 fractions per week, Monday to Friday, for a period from 2 to 8 weeks without interruptions.

However, there are some scheduled interruptions – with our previous acknowledgement (public holidays, preventive maintenances) and non scheduled interruptions – not programmed – (equipment mal function, clinical and personal reasons). These interruptions may be responsible for an increase in the global treatment time.

Radiobiological factors suggest the need to maintain the effective end date the same as the initial medical prescription being therefore recommended the need to compensate the treatments. This consists in maintaining the number of fractions and the dose per fraction, administrating one extra fraction during the weekend or the 2 fractions per day with a minimal interval of 6 hours between each, in order to maintain the local tumor control. 

The development of the therapeutic activities in the Clínica de Radioterapia e Medicina Nuclear (CRMN) in Faro, have lead to the creation of quality indicators that allow us to indentify the causes of the interruptions and delineate strategies that allow the optimization of the global treatment time.

The aspects put in to consideration were:
- Retrospective study between June 2006 and June 2008, with a total of 1364 patients;
- All patients were includes regardless age, sex, stage and location of the tumor; associated modalities and therapeutic intent;
- Treatments that were compensated were put in to account as to not differ from those that didn’t have any interruption.

The study shows that 29% of the patients finished the treatment in the scheduled time and of these, 220 (55%) had do compensate treatments in order to achieve that. Regarding the patients whose effective end time differs from what was scheduled 695 patients (51%) didn’t have any compensation and the difference between the global treatment time was between 0 and 5 days, as shown on graphic 1.

Studies suggest that differences less than 5 days don’t affect the possibility of a recidive of the disease and recommend that in cases were it is not possible to avoid interruptions, to try and reduce is as much as possible.

Negative values regarding the end dates mean the patients finished the treatment before the scheduled time (only puts in to account the scheduled interruptions) because during the treatment period and despite downtime of the Linac, the treatments were compensated.

The most frequent number of predicted interruption days was 3, and in most of the situations patients compensated 1 day (graphic 3).

Studies refer that the minimal interval of interruption that may cause a significant effect on the outcome of the treatment is of 2 days. And that over 30% of the treatments are interrupted, such as this study demonstrates.

Regarding the occurrence of interruptions 248 patients didn’t have any interruption. However, 23% (n=315) of the patients had non scheduled interruptions and these were due to: equipment mal function – 28%; patients reasons (no mean of transportation, personal reasons) – 27% and the suspension of the treatment (side effects of the treatment) – 43%

In these interruptions the most frequent amount of downtime is 1 to 2 days (graphic 4).

We can consider this as a positive aspect because the number of days that a patient stops treatment due to non scheduled interruptions is less than due to scheduled ones. This indicates the existence of strategies in order to obtain an improvement on the quality of the treatment, such as the compensations.

To maintain the effective end time the same as the planned end time, patients compensated the treatments whenever it was possible. However other measurements could be implemented in order to minimize the impact of the interruptions such as avoiding scheduled maintenances of the equipment near public holidays or even having the maintenances during the weekend. Make patients understand the importance of having the treatments daily and to avoid severe reactions which may lead to interruptions and making radiobiological calculations every time the global treatment time is extended.

This study only permits to evaluate the global treatment time as a quality parameter. The study of the local tumor control of these patients would be important to complement this study.


Conclusion

Methods

Results and Discussion

Introduction

Purpose


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