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Original Research

Radiotherapy access in Belgium: How far are we from evidence-based utilisation?

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Brachytherapy

Abstract ***Introduction:*** Underutilisation of radiotherapy has been observed worldwide. To evaluate the current situation in Belgium, optimal utilisation proportions (OUPs) adopted from the European SocieTy for Radiotherapy and Oncology – Health Economics in Radiation Oncology (ESTRO-HERO) project were compared to actual utilisation proportions (AUPs) and with radiotherapy advised during the multidisciplinary cancer team (MDT) meetings. In addition, the impact of independent variables was analysed.

Materials and methods: AUPs and advised radiotherapy were calculated overall and by cancer type for 110,810 unique cancer diagnoses in 2009–2010. Radiotherapy utilisation was derived from reimbursement data and distinguished between palliative and curative intent external beam radiotherapy (EBRT) and/or brachytherapy (BT). Sensitivity analyses regarding the influence of the follow-up period, the survival length and patient's age were performed. Advised radiotherapy was calculated based on broad treatment categories as reported at MDT meetings.

Results: The overall AUP of 37% (39% including BT) was lower than the OUP of 53%, but in line with advised radiotherapy (35%). Large variations by tumour type were observed: in some tumours (e.g. lung and prostate cancer) AUP was considerably lower than OUP, whereas in others there was reasonable concordance (e.g. breast and rectal cancer). Overall, 84% of treatments started within 9 months following diagnosis. Survival time influenced AUP in a cancer type-dependent way. Elderly patients received less radiotherapy.

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Conclusion: Although the actually delivered radiotherapy in Belgium aligns well to MDT advices, it is lower than the evidence-based optimum. Further analysis of potential barriers is needed for radiotherapy forecasting and planning, and in order to promote adequate access to radiotherapy.

1. Introduction

Radiation oncology is one of the pillars of multidisciplinary oncology care, indicated for cancer control and cure, with additional impact on quality-of-life through organ-preservation and symptom palliation. To obtain the full benefit of radiotherapy, all patients needing it, should get access to state-of-the-art radiotherapy [1].

Using evidence-based estimations, the Australian Collaboration for Cancer Outcomes, Research and Evaluation (CCORE) determined that 48% of all patients diagnosed with cancer in Australia needed radiotherapy at least once in the course of their disease [2,3]. Applying this methodology to Europe, the Health Economics in Radiation Oncology project of the European SocieTy for Radiotherapy and Oncology (ESTRO-HERO) showed that roughly 51% of all European cancer patients require radiotherapy, yet, with an absolute difference of 6.2% among countries. With an optimal utilisation proportion (OUP) of 53%, Belgium was identified as the country with the highest radiotherapy needs in Europe [4,5].

Unfortunately, evidence-based needs are almost never covered: only about 70% of the cancer patients in Europe needing radiotherapy actually receive it. In Belgium, using aggregate radiotherapy reimbursement data, the actual utilisation was estimated to be close to 80% of the calculated optimum utilisation [5]. Such data do not only provide insight into the actual gap in radiotherapy uptake, but also form the basis to project the needs into the future, hence support decision-making on radiotherapy planning and provision, which typically requires a long-term horizon to account for capital investments and training of personnel [6].

The present study aimed to analyse the actual radiotherapy utilisation in Belgium by tracking radiotherapy reimbursement data over time for a cohort of individual patients with a unique cancer diagnosis. Besides the comparison between actual and optimal radiotherapy utilisation, insight was sought into treatment recommendations during multidisciplinary cancer team meetings. Independent variables such as tumour type, treatment timing, survival length and patients' age were analysed for their influence on radiotherapy utilisation.

2. Materials and methods

2.1. Actual versus optimal and advised radiotherapy utilisation

The optimal utilisation proportion (OUP) was studied by ESTRO-HERO for all tumour types defined by CCORE. The Belgian estimates, overall and by tumour type, relate to cancer incidence for the years 2010–2011 [4,5].

OUPs were compared with actual utilisation proportions (AUPs) and with radiotherapy advised during the multidisciplinary cancer team (MDT) meetings. A total of 113,153 patients with a unique cancer, diagnosed in 2009–2010, were selected from the population-based Belgian Cancer Registry (BCR) database to calculate the AUP and estimate MDT advices.

For each cancer, incidence date, topography and MDT treatment recommendations were selected from the BCR database, the latter giving an indication on the pattern of radiotherapy prescription in Belgium.

2.2. Actual radiotherapy utilisation

Using the national number for social security as a unique patient identifier, radiotherapy reimbursement data from the Health Insurance Companies, provided by the Intermutualistic Agency (IMA), were coupled to the BCR data. These reimbursement data were available for a period ranging from one year before until five years following the incidence year, limited to the end of 2014. Health insurance being obligatory in Belgium, IMA data cover more than 98% of the Belgian population. Analyses were restricted to patients for whom a coupling with IMA data could be established (n = 110,810).

All reimbursement codes for a radiotherapy course were taken into account [7]. These codes allow a distinction between short 'palliative intent' courses of external beam radiotherapy (EBRT) (1–10 fractions), long 'curative intent' courses of EBRT (11–35 fractions), EBRT followed by brachytherapy (EBRT-BT), and BT only. Only first courses charged within a time window of one month before the incidence date until the end of the observation period were considered.