



SCHOOL

ESTRO Mobility Grant (TTG):

MR-guided brachytherapy for cervical cancer

Host institution: Utrecht Medical Center (UMC), Department of Radiotherapy, Utrecht, The Netherlands

Period of visit: 8 - 13 March 2020

Our selection for a mobility grant offered by the European Society for Radiotherapy and Oncology (ESTRO) at the beginning of 2020 enabled us to visit the Department of Radiotherapy at Utrecht Medical Center (UMC) in order to develop our theoretical and practical skills regarding the implementation of magnetic resonance (MR)-guided brachytherapy for gynaecological tumours, more specifically for cervical cancer, in a renowned reference centre.

During our stay, we were warmly welcomed by the staff, despite the fact that our visit coincided with the COVID-19 pandemic and all the restrictive measures that were imposed in various countries, including The Netherlands. We fortunately had the chance to attend the MR-suite and overlook multiple implantations of various cases, each of which presented a unique case necessitating a patient-adapted therapeutic approach. We were involved in open discussions with experts in the field (radiation oncologists, medical physicists and radiotherapists (RTTs)) that focused on the importance of each working group and its crucial role in the procedure. With one radiation oncologist's assistance, we were able to depict clearly the brachytherapy indication and were involved in an implantation decision-making process with regard to the use of intracavitary +/- interstitial catheters. Later on we were also able to be involved in the contouring definition of the gross tumour volume (GTV), high-risk clinical target volume (CTV), intermediate-risk CTV and organs at risk (OARs) (following the gynae recommendations of Groupe Européen de Curiethérapie (GEC)-ESTRO). The various MR-scans (pre-brachytherapy, short scan and pre-irradiation scan) that were acquired before the irradiation of the patient were demonstrated to us and thoroughly explained, and we were able to oversee contouring and planning in general.

RTTs and the medical physicist dedicated time to us through the whole planning procedure, which enabled us to witness various steps along the way, including catheter reconstruction, dose optimisation, counter signing, dose parameter documentation and implementation of the patient-specific quality assurance (QA) plan following its final approval by the radiation oncologist. We also had the opportunity to analyse fully and various questions were posed and answered during the planning procedure by the fellow medical physicist. We managed to get a clear idea of matters such as the importance of 'correct' placement of dose points during planning, which would eventually lead to a more accurate estimation/outcome regarding the effects of the dose on the OARs, and whether the anatomy of the patient on the first fraction in combination with the OAR constraints would allow for the fractionation scheme that had been proposed for the patient to be applied.

We managed to gain hands-on experience with various applicators and to understand the evolution of the brachytherapy procedure as well as the current use of the equipment, enabling us to analyse all the advantages and disadvantages of each tool (Utrecht applicator with ovoids and Venezia ring applicator).

Overall, procedure tips and tricks that ease the application and the irradiation of the patients were shared with us. The importance of patient and personnel MR safety was also highlighted (structural design of MR-suite, MR-compatible equipment, MR-safety training intra-/interdepartmental) on multiple occasions. This enabled understanding of all the different steps and the QA measures that need to be followed, which were aimed first of all at patient safety and translated to oncological benefit.

Concurrently, since the radiotherapy department of UMC was a pioneer in the development of the MR-linear accelerator (LINAC), we took the opportunity during our stay to attend a few treatments in the MR-LINAC, to witness first-hand the application of this sophisticated piece of equipment and to be taken through the whole procedure.

Overall, we benefited from this visit in various ways and gained a tremendous learning experience. The obtained information has added to our brachytherapy knowledge and will definitely aid in the implementation of solely MR-guided brachytherapy for gynaecological tumours in our department in Cyprus. The opportunity to share knowledge and expertise and to tackle real-life cases, while at the same time building interdepartmental bridges with experts in the field, can be considered incomparable. We

are grateful for the visit and would certainly recommend such a visit to any professional interested in expanding their horizons in the field of radiotherapy and more specifically gynaecological brachytherapy.



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