



## ESTRO 2021 RTT track report

- **Symposium** - Innovations in radiotherapy practice
- **Proffered papers** - Image-guided radiotherapy and treatment verification

### *Symposium - Innovations in radiotherapy practice*

The session on innovations in radiotherapy practice highlighted new technology and new indications for radiotherapy, which demonstrated that radiation therapists (RTTs) must expand their knowledge in new domains and understand how new technologies will change their common routines. The first topic in this session was presented by Karen Pilling (clinical lead superintendent radiographer, Newcastle Upon Tyne Hospitals National Health Service (NHS) Foundation Trust, Newcastle Upon Tyne, UK) about stereotactic body radiation therapy (SBRT) in cardiac diseases: the evolving role of the RTT. She demonstrated that RTTs had to gain knowledge in this new area of cardiac disease, and that they had delivered a major and important contribution in the development of the SBRT procedure for treatment of patients with ventricle tachycardia.

The second presentation, by Sophie Perryck (chief radiation therapist, University Hospital of Zurich, Switzerland) involved a nice discussion of whether surface-guided radiation therapy (SGRT) was a hype in radiotherapy or the new standard of practice. SGRT seems to be a new hot topic in patient positioning, but literature shows, that these systems have been already explored for some time. However, the (still ongoing) technical development of SGRT systems has increased their potential to improve patient comfort and accuracy in treatment delivery. Several studies report, that SGRT could provide the opportunity to perform marker/tattoo-less patient set-up and even an open- or no-mask set-up in head and neck cancer patients.

The final presentation was from Ingrid Kristensen (a dosimetrist at Skane University Hospital, Sweden) on innovative practice for lymphoma radiotherapy and whether protons can be used in this type of cancer. Several studies report that the use of protons in lymphoma radiotherapy provides the same target coverage as photons, while it significantly reduces the impact on organs at risk (OAR), especially in treatment of the mediastinal region. Also, the use of gating with deep inspiration breath hold has been demonstrated to improve target coverage and reduce the dose to OAR. However, gating can be a challenge, as these large, deep volumes require several breath holds, which result in the need for more beams than would be necessary without gating, and for targets caudal of the diaphragm.

### *Proffered papers - image-guided radiotherapy (IGRT) and treatment verification*

The proffered papers, that were submitted on IGRT and treatment verification, showed that the use of cone-beam computed tomography (CBCT) still remains an evolving field of interest in radiotherapy, powered by the novelties presented in this session.

Carina van Gijlswijk (chief radiotherapy technician, Leiden University Medical Center, The Hague, The Netherlands) presented a study on the use of intravenous (IV) contrast-enhanced CBCT to verify the position for SBRT of ventricular tachycardia. Treatment of patients in non-oncological domains requires a different perspective on image quality. The use of IV contrast improved the possibility to distinguish cardiac structures on CBCT and improved the automatic registration results. A second study on CBCT image quality, was presented by Finbar Slevin (clinical research fellow and clinical oncology specialty registrar, University of Leeds, UK). He had performed a feasibility trial of buscopan to improve CBCT image quality during abdominal/pelvic stereotactic ablative radiotherapy (SABR). The results of this study demonstrated, that the use of intravenous and intramuscular administered buscopan could minimise the production of artefacts caused by gas pockets in the bowel. Both studies demonstrate it is possible to use non-technical/hardware solutions to improve CBCT image quality.

The role of IGRT also remains an important aspect of treatment verification. This was shown by two other studies presented in this session. Esther Suliali (senior therapy radiographer, Mount Vernon Cancer Centre, Middlesex, UK) presented her work on interfractional changes of the effect of the rectum and bladder on uterus position in cervix external beam radiation therapy assessed on CT and CBCT scans. She showed, that these changes were patient-specific and reinforced the importance of individualised internal target volume (ITV) margins and IGRT. Another study, in which IGRT played a specific role in treatment verification, was presented by Flávia Das Neves Horácio (Iridium Netwerk, radiation oncology, Antwerp, Belgium) on the comparison of SGRT with a laser-based set-up in breast cancer radiation therapy. In this study, IGRT was used as a validation method to compare

both set-up methods. The results of this study demonstrated that a surface-based set-up significantly improved the interfractional set-up and therefore proved the potential of a marker/tattoo-less set-up strategy.

Even during the pandemic, the additional value of IGRT has been demonstrated. A two-centre feasibility study of single fraction lung SABR, which was presented by Zankhana Jani (University College London Hospitals Foundation Trust, radiotherapy, London, UK), showed that it was possible to treat patients safely and with acceptable toxicity in one ultra-hypofractionated session. This finding suggest it might be possible to decrease the number of patient visits during the COVID pandemic. CBCT images also provided information on the appearance of COVID-19 in asymptomatic patients. A different method to assess COVID-19 involved the use of maximum intensity projections (MIPs) to detect lung density changes. The study on image review for COVID-19 on CBCT vs. MIPs, presented by Abigael Clough (research superintendent radiographer at The Christie NHS Foundation Trust, Manchester, UK), showed that the use of MIPs facilitated more rapid detection of lung density changes, which reduced the impact on clinical resources and minimised the burden of the screening of infections in radiotherapy departments compared with CBCT.



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