Poster Viewing: Poster Viewing: Patient preparations / others

PV-087

A comparison for pelvic cancer external beam Radiotherapy with and without immobilization devices

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Purpose or Objective

To identify the most reproducible technique of patient positioning and immobilisation during pelvic radiotherapy. Radiotherapy plays an important role in the treatment of pelvic malignancies. Errors in positioning of patient are an integral component of treatment. The present study compares two methods of immobilization with no immobilization with an aim of identifying the most reproducible method.

Material and Methods

65 consecutive patients receiving pelvic external beam radiotherapy were retrospectively analysed. 30, 21 and 14 patients were treated with no-immobilization with a leg separator, whole body vacuum bag cushion (VBC) and six point aquaplast immo- bilization system, respectively. The systematic error, random error and the planning target volume (PTV) margins were calculated for all the three techniques and statistically analysed.

Results

The systematic errors were the highest in the VBC and random errors were the high- est in the aquaplast group. Both systematic and random errors were the lowest in patients treated with no-immobilization. 3D Systematic error (mm, mean ± 1SD) was 4.31 ± 3.84, 3.39 ± 1.71 and 2.42 ± 0.97 for VBC, aquaplast and no-immobilization, respectively. 3D ran- dom error (mm, 1SD) was 2.96, 3.59 and 1.39 for VBC, aquaplast and no-immobilization, respectively. The differences were statistically significant between all the three groups. The calculated PTV margins were the smallest for the no-immobilization technique with 4.56, 4.69 and 4.59 mm, respectively, in x, y and z axes, respectively.

Conclusion

No-immobilization technique with a leg separator is the most reproducible technique of patient positioning in the treatment of pelvic malignancies. The use of six point aquaplast sys- tem is comparatively more reproducible than the VBC system. In either case they require more frequent on-board image verification compared to no-immobilization technique. No- immobilization technique requires the smallest PTV margins (<5 mm) as compared to the other two techniques

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The initial experience of Icon Group, implementing a new radiotherapy service in China

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Purpose or Objective

It is well known that there is a global shortage of cancer care. By 2025 there will be an estimated 19.3 million new cancer cases and 11.4 million cancer deaths, with China accounting for almost a quarter of these (cancer.org/canceratlas).
With cancer incidences increasing in China, a shortfall of Radiation Oncology resources has been highlighted. This increase is being driven by an aging population, lifestyle and environmental factors (Chen, 2015). As a result, by 2020 there will be a shortfall of around 3000 treatment units, 2500 radiation oncologists, and 11,000 radiation therapists (Datta, 2014).

Material and Methods

Icon Group is establishing new cancer Treatment Centres in China to provide access to care closer to people's homes and to aid in the development of modern radiotherapy services.
The purpose of this report is to share the experience of the process, which is still in its infancy, from the Icon Group's perspective. As an Australian company, expanding internationally, there are many challenges: a major one being the need for well trained personnel to staff the new installations. Therefore, a crucial aspect of this project is to provide training, competency evaluation and follow up education to locally employed clinical and technical staff.

Results

This will be done with the intention of delivering Australian standard Radiation Oncology health care in China. ICON is providing an intensive training programme, follow up education, and supervision, designed and delivered by ICON Australia's staff, to enable high quality Radiotherapy in China.

Conclusion

Our results will be demonstrated by the successful implementation of new radiotherapy centres staffed by local clinical and technical personnel with cooperation from ICON Australia.

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Transitioning to Acuros XB – Peter MacCallum Cancer Centre radiotherapy planning perspective

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Purpose or Objective

In September 2018, our organisation transitioned to a single treatment planning system (TPS) and in the process moved from a dose to water algorithm, Analytical Anisotropic Algorithm (AAA), to a dose to medium algorithm, AcurosXB (AXB) using the Eclipse TPS (v15.5, Varian Medical Systems, Palo Alto, USA). Extensive training of all parties, including specific content and sessions for radiation therapists (RT) and radiation oncologists (RO), was undertaken pre-implementation to highlight expected differences due to the algorithm change.

As part of this Eclipse implementation, an extensive suite of clinical protocols were created to cover all tumour streams to assist in the planning pathway, completing a cycle of work that updated all tumour stream planning goals and constraints. Following system roll out, it became apparent that challenges existed in obtaining comparable dose distributions to the previous algorithm – this was especially evident in the head and neck (H&N) tumour stream. The purpose of this presentation is to explore these differences, and demonstrate how these clinical protocols have been adjusted in light of the clinical data.

Material and Methods

The main planning difficulties centered on D100% target coverage by a prescribed isodose line to any GTV or CTV, and PTVs within areas of high density, both of which were previously achievable with AAA. Although these issues were first prevalent in H&N, it became apparent in other body sites as well (e.g. SABR and pelvis). This paper evaluates these metrics on a variety of body sites.