Cervical Cancer Radiotherapy

Cervical cancer is a significant global health burden being the 4th most common cause of cancer related death in women worldwide [1]. This is despite the introduction of primary and secondary prevention measures within the developed world. A high proportion of patients present with locally advanced disease, defined as FIGO stage IB2 to IVA. In this group of patients the standard of care is to treat curatively with 1.5%, 8% and 28% experiencing grade 3 or 4 genitourinary, acute gastrointestinal toxicity 53% from 95%, chronic bowel and urinary toxicity; grade 3 diarrhoea 5.6% from 16% [6-8]. However, the safe delivery of IMRT relies upon routine practice there remain some uncertainties regarding the magnitude of potential late effects. These include the peripheral dose increase consequences and the effects of IMRT on late second cancer risk. Peripheral dose does increase by 0.12% of prescribed dose with IMRT [19], an effect which is less with lower energies. The clinical consequence of this is currently unclear. The absolute risk of second cancers is increased by 0.75% at 10 years with IMRT, again a figure which is higher if higher energy is used [20]. Structured follow up and data collection in the years to come will be vital to monitor the true late consequences of IMRT.

Due to the fact that IMRT has only recently been introduced into routine practice there remain some uncertainties regarding the magnitude of potential late effects. These include the peripheral dose increase consequences and the effects of IMRT on late second cancer risk. Peripheral dose does increase by 0.12% of prescribed dose with IMRT [19], an effect which is less with lower energies. The clinical consequence of this is currently unclear. The absolute risk of second cancers is increased by 0.75% at 10 years with IMRT, again a figure which is higher if higher energy is used [20]. Structured follow up and data collection in the years to come will be vital to monitor the true late consequences of IMRT.

Brachytherapy is an integral part of cervical cancer chemoradiation. Traditionally, dose was applied in a standard distribution prescribed to an anatomical point (point A). In the last 10 years IGBT has been introduced where dose is prescribed to a target volume (high risk CTV) and the use of magnetic resonance imaging (MRI) and interstitial needles facilitates more tailored dose delivery [21]. The retro-embrace data has shown a potential increase in overall survival of approximately 10% as well as increase in pelvic control [22]. This is exciting but does open the question of how high a dose do we need to deliver and how much pelvic control contributes to survival. The on-going EMBRACE2 study may help to answer these questions. When reviewing the use of IGBT the variation of resources available across the world is highlighted. Even within developed countries variation is
significant [23] and must be addressed through collaboration and setting of agreed standards.

Other methods of improving chemo-radiation outcomes for locally advanced cervical cancer may be the addition of chemotherapy before or after radiation. This is being investigated in the international randomised controlled trials INTERLACE and OUTBACK respectively. The potential impact of alternative radiosensitisers is another area of current interest with early phase studies underway.

Within the field of radiation therapy for locally advanced cervical cancer we continue to strive to improve outcomes. There are therefore many exciting technological and pharmacological advances which could increase cure rates and decrease toxicity. However, to ensure the best outcomes, these new techniques and treatments should be introduced with a measured systematic approach and a full appreciation of their limitations ideally within international collaborative studies.

There are no conflicts of interest to report.

References