

FLASH radiotherapy

Kristoffer Petersson, MRC Oxford Institute for Radiation Oncology

One in every two people in the UK born after 1960 is estimated to be diagnosed with some form of cancer during their lifetime. Radiotherapy forms part of the treatment in 30-50% of these cases. Unfortunately, radiotherapy also damages the healthy tissue surrounding the tumour. Treatment success is dependent on delivering a high enough dose of radiation to destroy the tumour cells without causing severe trauma to the surrounding tissues. FLASH radiotherapy (FLASH-RT) is a new technique which involves treatment of tumours at ultra-high dose rates which actually reduces the trauma to normal tissue around the tumour, whilst equalling the anti-tumour effect of conventional dose rate radiotherapy (CONV-RT). However, very little is known about the mechanisms behind the FLASH effect. Our research aims to better understand these mechanisms in the hope of bringing us closer to a successful implementation of FLASH technology in our radiotherapy clinics. In this presentation, the potential benefits with FLASH radiotherapy will be presented, possible explanations for the FLASH effect, challenges with clinical implementation of the technique, as well as current research we are involved with in the field.