The treatment of Head and Neck cancer in Manchester using Proton Beam Therapy

Greater Manchester Cancer Conference 2022

Showcasing an innovative treatment delivered in Manchester and demonstrating how patient-focussed follow-up and outcome collection will inform future practice

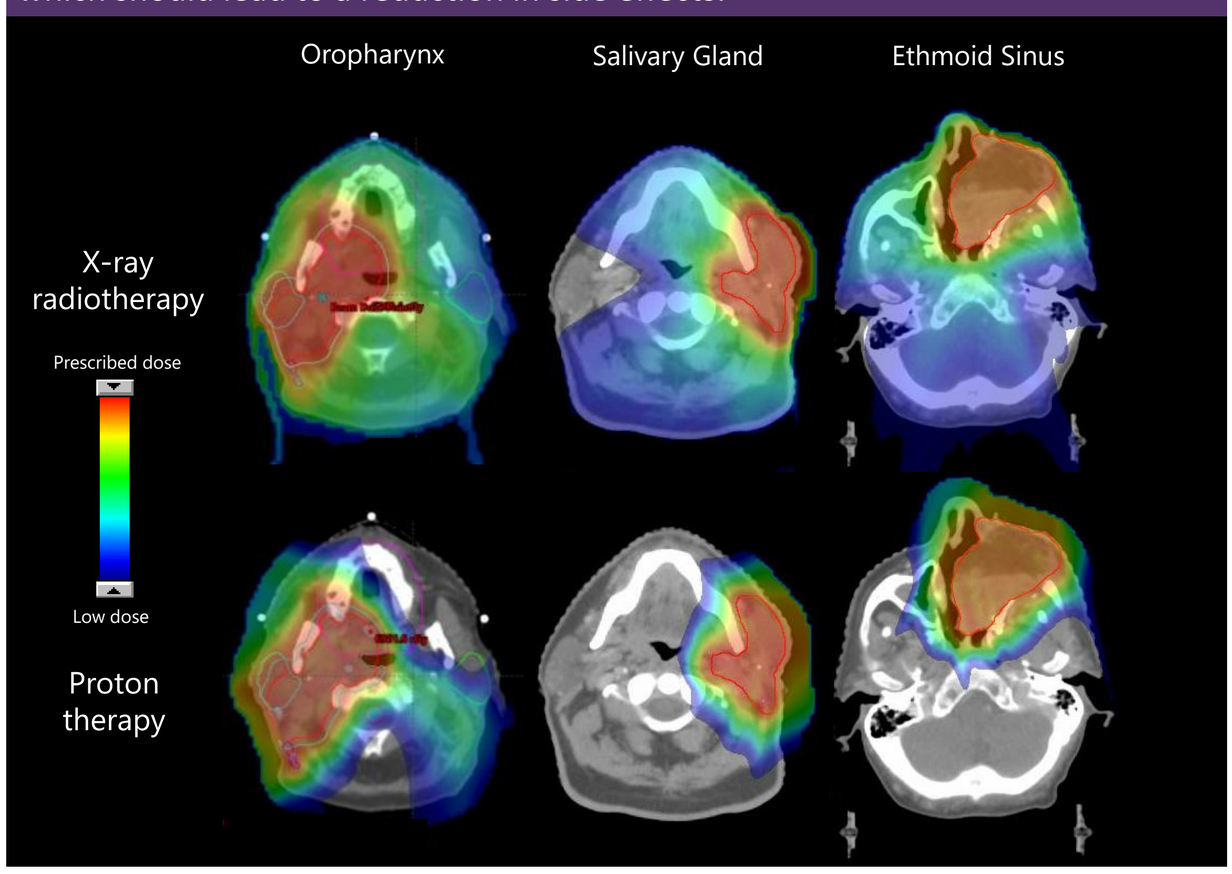
Clinical background

- Head and Neck (H&N) cancer is the 8th most common cancer in the UK[1] but the incidence in Greater Manchester is 16% higher than the national average[2].
- Intensity-modulated radiotherapy (IMRT) (using x-ray radiotherapy) is routinely used as the standard of care for treating head and neck cancer.
- The Christie Proton Beam Therapy (PBT) centre is currently commissioned to treat any H&N cancer in children and young adults along with selected adult cases who are felt to receive the greatest benefit.
- PBT has the potential to reduce both the immediate and longer-lasting side effects experienced by patients with H&N cancer while being at least as effective at treating the cancer as more established x-ray radiotherapy techniques.
- The Christie PBT Centre is one of 2 NHS centres offering high-energy proton therapy (alongside UCLH), treating eligible patients from the northern half of the country (including Greater Manchester).
- To identify those patient groups who most benefit from receiving PBT we must investigate treatment outcomes compared to x-ray radiotherapy through clinical trials.

PBT treatment of H&N cancer

- Protons deliver dose to a fixed depth in tissue, depending on their energy, and not beyond this depth. This enables us to reduce the amount of potentially damaging radiation being delivered to healthy tissues.
- PBT is used to treat H&N cancer around the world but outcome data has not been routinely collected to provide high quality evidence for its wider use.

Some examples of our PBT treatments are shown below compared to x-ray radiotherapy. You can see that the tumour is treated equally by both methods but that PBT is able to greatly reduce the lower radiation dose to healthy tissue which should lead to a reduction in side effects.



The proton treatment room showing the robotic treatment couch that moves the patient into position beneath the treatment nozzle which can rotate 360 degrees around the patient delivering proton beams from different directions

So far at The Christie PBT Centre, we have treated:

81	83	39
Adults on the TORPEdO[3] clinical trial (oropharynx)	Adults for other H&N cancers (e.g. sinus, nasal cavity)	Children, teenagers and young adults with H&N cancer

The future

- Patient recruitment to the TORPEdO trial should be completed next year and provide us with the evidence needed to determine if PBT is suitable as a routine treatment option for patients with oropharyngeal cancer.
- Within the next 12 months we will develop 3 further studies to investigate the effectiveness of PBT for:
  - Nasopharyngeal cancer
  - Sino-nasal cancer
  - Salivary gland cancer
- For all of these studies extensive information will be collected directly from patients on the side-effects they experience and from both doctors and patients on the control of their cancer.
- The future aims for The Christie are to provide a full portfolio of treatment options such that patients' treatment for H&N cancer in Manchester and across the UK can be personalised according to their needs.

References

[1] https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/head-and-neck-cancers#heading-Zero

[2] https://nwcr.org/what-we-do/cancer-in-our-region/greater-manchester/

[3] Price J, Hall E, West C, Thomson D. TORPEdO - A Phase III Trial of Intensity-modulated Proton Beam Therapy Versus Intensity-modulated Radiotherapy for Multi-toxicity Reduction in Oropharyngeal Cancer. Clin Oncol (R Coll Radiol). 2020 Feb;32(2):84-88.

This poster was prepared by Matthew Clarke[1] on behalf of The Christie Proton Therapy Centre with input from Dr David Thomson and Dr Lip Lee. Additional thanks to Matthew Lowe and Frances Charlwood.

1 Clinical Scientist, The Christie NHS Hospital NHS Foundation Trust (matthew.clarke21@nhs.net)

NHS The Christie NHS Foundation Trust