Liverpool invests in flexible robotic radiosurgery treatment system

The first Novalis TX linear accelerator in the UK – the latest robotic radiosurgery treatment system – was launched in February at the new Clatterbridge Cancer Centre, Liverpool. The £2.5 million system, combining state of the art radiation delivery systems with modern image guidance and motion management tools, supports the Department of Health's cancer strategy to drive improvements in cancer survival statistics through investment in radiotherapy.

The system enables stereotactic radiosurgery treatments to target brain lesions such as secondaries and recurrent gliomas, and some benign conditions such as acoustic neuromas or functional disorders such as arteriovenous malformations and trigeminal neuralgia. 'A great benefit of the knifeless Novalis Tx treatment over open brain surgery is the incredibly reduced recovery times for patients,' said Mr Mohsen Javadpour, Consultant Neurosurgeon at The Walton Centre NHS Foundation Trust, Liverpool.

It is the flexibility of the Novalis Tx system that makes it so valuable. In addition to offering stereotactic radiosurgery to cranial lesions, the device can also treat conditions outside the brain. 'Our business plan for introducing the machine was based on the fact that as well as enabling stereotactic radiosurgery treatments we're also able to offer a working linear accelerator that can deliver a routine radiotherapy service to patients with breast, prostate and lung tumours,' says Dr Brian Haylock, Clinical Director of Radiotherapy at Clatterbridge Centre for Oncology who, in addition to offering 150 stereotactic radiosurgery patient treatments, hopes to treat an additional 2600 routine patients (26 000 fractions of treatment).

The Novalis Tx radiosurgery platform, produced by Varian Medical Systems and BrainLAB, uses a powerful linear accelerator, which rotates around the patient to target radiation beams at tumours from virtually any angle. A set of sophisticated image guidance and motion management tools provide clinicians with detailed three-dimensional information about the shape, size and position of target lesions.

Key features include the ability to perform frameless radiosurgery, where doctors no longer have to immobilize patients in a stereotactic frame. This is made possible by the fact that after the patient lies on the treatment couch two X-ray images visualize the exact position of the patient and enable the sophisticated couch (with a robotic tilt mechanism that can move in six planes) to position the treatment site perfectly in the centre of the beam. If shifts greater than 0.5 mm occur, the procedure is halted and the couch repositions the patient.

Janet Fricker

David Brett, Marketing Director of Brainlab, Mr Mohsen Javadpour, Consultant Neurosurgeon The Walton Centre NHS Foundation Trust and Dr Brian Haylock, Clinical Director of Radiotherapy, Clatterbridge Centre for Oncology NHS Foundation Trust with the new system.

Minimally invasive surgery beneficial for spinal fractures

A retrospective claims-based data analysis suggests that over 65-year-olds in the USA whose spinal fractures were treated with minimally invasive surgery had a higher survival rate up to 4 years after treatment than patients who did not have surgery (Edidin et al, 2011). The evaluation is pending Food and Drug Administration (FDA) review of the claims.

The data further suggested that of the patients treated with one of the two minimally invasive surgical procedures available, a sub-group treated with balloon kyphoplasty had higher survival rate up to 4 years after treatment than a sub-group that was treated with vertebroplasty. During the evaluation period, Kyphon Balloon Kyphoplasty was the only balloon kyphoplasty treatment for spinal fractures cleared by the FDA in the USA.

Mr Michael Kotrba, Consultant Orthopaedic and Trauma Surgeon at Croydon University Hospital says: '... This is the first time we seem to have robust data showing that [minimally invasive surgical intervention] can save lives. Treating vertebral fractures by balloon kyphoplasty is cost effective and prevents people from lingering in pain. We now need to make sure that more patients are able to access this procedure on the NHS'.

Edidin AA, Ong KL, Lau E, Kurtz SM (2011) Mortality risk for operated and non-operated vertebral fracture patients in the Medicare population. *J Bone Miner Res* Feb 9 [Epub ahead of print]

Home urine test measures insulin production in diabetes patients

A simple home urine test has been developed which can measure if patients with type 1 and type 2 diabetes are producing their own insulin. The urine test, developed by researchers at the Peninsula Medical School, replaces multiple blood tests in hospital and can be sent by post as it is stable for up to 3 days at room temperature. Avoiding blood tests will be a particular advantage for children.

The urine test measures whether or not patients are still making their own insulin even if they take insulin injections. Researchers have shown that the test can be used to differentiate type 1 diabetes from type 2 diabetes and rare genetic forms of diabetes. Making the correct diagnosis can result in important changes in treatment and the discontinuation of insulin in some cases.

The key studies, led by Dr Rachel Besser and Dr Angus Jones and funded by Diabetes UK and the National Institute of Health Research, are published in *Diabetes Care* and *Diabetic Medicine*.