

City scientists have just what the doctor ordered with MRI scan breakthrough

A GROUP of patients in Aberdeen have become the first in the world to be scanned using a unique MRI technology.

A team from the University of Aberdeen has been leading the charge with the Fast Field Cycling (FFC) MRI Scanner.

The patients, who have all suffered strokes, agreed to be the first to be given scans by the new machine, carrying on a tradition of pioneering MRI technology in the city.

In the 1970s a team from the university built the original full-body MRI scanner and then used it to obtain the first clinically useful images of a patient.

The new equipment is different from the current generation of scanners, which have become a routine aspect of healthcare around the globe.

MRI scanners use a large magnet along with pulses of radiowaves to create detailed pictures of a patient's anatomy.

However, the new Fast Field Cycling scanners are able to extract far more information by varying the strength of the magnetic field generated during the scanning procedure.

Research group leader Professor

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By Lee McCann

David Lurie said: "Because FFC scanners can switch their magnetic field, it is almost like having 100 different MRI scanners in one.

"This gives an extra dimension to the data collected from each patient, greatly expanding the diagnostic potential.

"It is incredibly exciting to have imaged our first patients.

"This is a major step towards our technology being adopted by hospitals to benefit patients, which is the ultimate goal of our research.

"The patients who agreed to take part had suffered strokes and it is our hope that this could be used to help give early

diagnosis of diseases like cancer and Alzheimer's.

"Our hope is that we can demonstrate how useful this piece of equipment is - to show those firms building these machines that this is the way forward.

"It could mean that in five to 10 years, hospitals around the world have a scanner like this."

The team, based at the University's School of Medicine, Medical Sciences

& Nutrition, has already shown the potential benefits of FFC-MRI for diagnosis by studying tissue obtained from patients who have undergone surgery.

The prototype scanner was used to image the brains of patients who suffered from strokes in the hope extra information from the machine would help doctors examine brain tissue around affected areas more precisely. The study is called "PUFFINS" and is being led by consultant and senior lecturer Dr Mary Joan MacLeod.

She said: "Treatments for stroke have to be given very early to be effective, and the CT scans patients currently undergo on admission to hospital give us limited information to help plan that treatment.

"The Fast Field Cycling scanner has great potential, because it might give more accurate 'real time' information on what is happening in the brain tissue, helping to direct treatment."

Richard Johnson, one of the patients taking part and a former botany lecturer at the university says he remembers Professor John

Mallard who helped develop the original MRI scanner and early prototypes.

The 81-year-old underwent a scan last month following a stroke.

He said: "This is a very exciting project. I am full of admiration for the development and construction of this sophisticated machine, and the aims behind it. I wouldn't have missed this interesting session for the world.

"I saw one of the early prototype Magnetic Resonance apparatuses in the Biomedical-Physics Department in around 1964 or 1965 - which is partly why I was so excited to be a guinea pig in - and lucky enough to be shown round - the new machine."

The research team had been looking for a candidate who had suffered a stroke within the last 24 hours and who had also had a CAT scan, in order to compare and contrast the images.

Mr Johnson said: "They explained the prototype machine to me but it was quite a scary experience initially, going in head first and spending half-an-hour in the dark. But, it wasn't unpleasant.

"I also had a squeezing bulb in my hand if I felt panicked during the scan.

"Not only does this machine have less of a magnetic field, but it was also much less noisy; which I've been told is what makes the experience intimidating.

"I was pleased with how it turned out and it produced amazing photographs. I could see the grey area in my brain where the blockage was.

"It was such an impressive machine, the mathematics involved is incredible and it's a fantastic achievement to get it working."

The Aberdeen team behind FFC-MRI is leading a nine-strong consortium of research groups from six different countries, in a project called "IDentIFY" which received almost £6 million Horizon 2020 research grant from the European Union to develop the imaging technology and bring it closer to widespread use in hospitals.

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REASSURANCE: Prof David Lurie oversees the scan of a patient in Aberdeen.



MAJOR STEP: Prof David Lurie pictured with the FFC-MRI machine, which has already been used to scan five volunteer stroke patients.

“It is incredibly exciting to have imaged our first patients”

TEAM: With the Fast Field Cycling scanner are, from left, Dr James Ross, Dr Lionel Broche, Dr Mary Joan MacLeod and team leader Prof David Lurie.