



RESEARCH

INFORMATION

TITLE – What is the best brain imaging strategy after minor stroke or transient ischaemic attack?



AIM

A specialised magnetic resonance scan (MRI) sequence called 'diffusion weighted imaging' (DWI) can show early changes of ischaemic stroke (stroke due to blocked arteries). These changes are found in some, but not all, people after ischaemic stroke or transient ischaemic attack (TIA).

In a cohort of people with transient or minor symptoms where a firm diagnosis of TIA or stroke could not be made, we estimated:

- the frequency of MR DWI changes;
- the effect of MR DWI on clinical diagnosis and planned treatment;
- The frequency of recurrent stroke in people with and without MR DWI changes.



KEY FINDINGS

- MR DWI lesions were present in about 20% of people with transient or minor symptoms
- MR DWI had a small effect on planned treatment for patients with transient or minor symptoms.
- The risk of further stroke is higher in people with MR DWI lesions than those without.
- We surveyed clinicians from around the UK about the use of MRI DWI and most said that MR DWI findings are useful in patients with transient or minor symptoms.





WHAT DID THE STUDY INVOLVE?

- People with minor persistent or transient symptoms were invited to take part in the study when they came to the emergency department or TIA clinic
- Doctors gave their opinion about the likeliest diagnosis before any tests
- Each participant had an MRI scan within 5 days of their symptom onset
- Each MRI scan was read by a clinical and a research neuro-radiologist
- Each participant was sent a questionnaire at 3 months, and medical records were reviewed to see if they had had a further stroke



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

- A few people (n=14) who were approached could not have an MRI scan, because they were claustrophobic, had a contraindication to MRI scanning, or were too large for the scanner.
- Data were available from 272 people: 127 women and 145 men.
- An MR DWI lesion was present in 22% of participants.
- The proportion of participants with MR DWI lesion differed by a doctor’s diagnosis. (Figure 1)
 - TIA or stroke most likely diagnosis: 33% had a MR DWI lesion;
 - TIA or stroke not most likely diagnosis: 18% had a MR DWI lesion
- MRI scanning made a small difference to planned treatment – an extra 5% of patients would be treated with an antiplatelet drug after an MRI scan.
- At 3 months, 22% of people had some persisting but mild symptoms
- By the end of the study, 11 people had a further stroke, 9 of those who had an MRI DWI lesion and 2 of those who did not (hazard ratio 1.9, 95%CI: 0.3 to 7.6) (Figure 2).

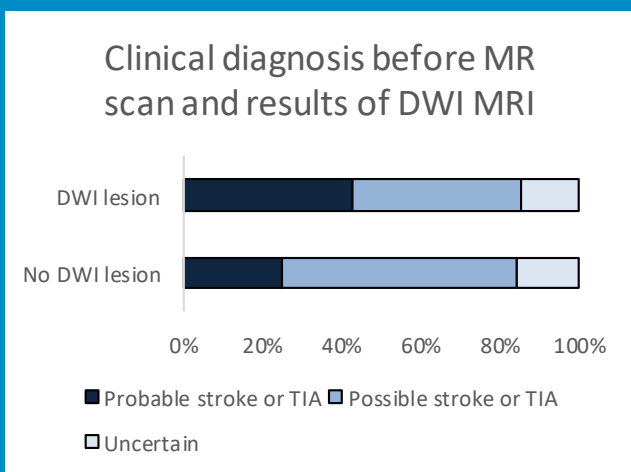


Figure 1: MRI and diagnosis

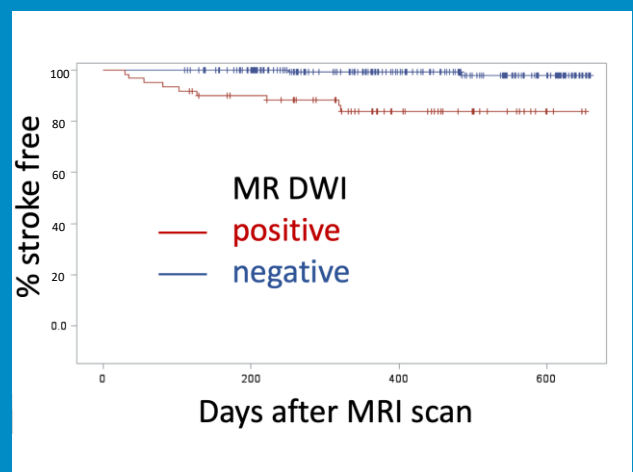


Figure 2: MRI and prognosis



WHAT IMPACT COULD THE FINDINGS HAVE?

- **Policy:** Most TIA and ED departments do not have rapid access to MRI scanning. Here we show that in patients with transient or minor symptoms, many doctors think that MR DWI is a useful test, even though it is negative in most (80%) patients and would change treatment in very few (5%). The next question is how widely it should be used, and what resources are needed to provide it.
- **Practice:** MRI scanning can help to change the diagnosis in a small proportion of patients, particularly those where the diagnosis is uncertain. The number of people with a change in drug treatment is likely to be very modest, 5% in the current study. A large number of patients have to be scanned quickly after their symptoms to find a few in whom the scan might change treatment.
- **Research:** further research is needed on the appropriate use of the limited number of MRI scanning slots, and the cost-effectiveness of this approach, to maximise benefit for patients.



HOW WILL THE OUTCOMES BE DISSEMINATED?

- The findings are being prepared for presentation at:
 - the Stroke Forum, the largest UK-based stroke conference
 - a paper for a neurology or stroke journal
 - presentation at Scottish national stroke meeting



CONCLUSION

- MRI scanning in patients after suspected stroke or TIA is feasible and safe
- About 1 in 5 patients with suspected stroke have a positive DWI MRI scan
- Methods to prioritise limited MRI resource are needed for TIA and stroke services



RESEARCH TEAM & CONTACT



Dr. William Whiteley
Prof. Joanna Wardlaw



william.whiteley@ed.ac.uk
joanna.wardlaw@ed.ac.uk



0131 5361000

Additional Information

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