

European Stroke 2020: Importance of timely MRI brain Diffusion weighted Imaging in differentiating mimics of ischaemic stroke

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Background: MRI brain with diffusion weighted imaging has become the best modality over last decade in the diagnosis management of acute stroke and mimics especially when done within 0 to 14 days.

MRI studies in acute strokes are done retrospectively and they suggest 15-30% MRI negative stroke.

MRI with DWI can be positive in few circumstances other than ischaemic stroke for example cerebral venous sinus thrombosis, epilepsy, hypoglycaemia, migraine, abscess, herpes simplex encephalitis, demyelinating disease, Mitochondrial encephalopathy lactic acidosis and stroke like episodes, and Posterior reversible encephalopathy.

Objectives: We surveyed the MRI scans of patients presenting with stroke like symptoms and analysed the incidence of MRI negative acute strokes and MRI positive non-strokes at our acute stroke service over 4-month period.

Methods: We collected data of patients admitted under seven stroke skilled consultants using patient case notes, MRI with DWI images and reports by radiologist, discharge letters and clinic follow up clinic letters.

Results: We reviewed total of 180 patients (89 male and 91 female) using above methods. Overall 98% of the patients had MRI with DWI done within 14 days of admission and among those 90% of patients had MRI within 72 hours of presentation to acute stroke service. A total of 88 (49%) patients had positive MRI and 92 (51%) MRI was negative.

MRI positive Non-stroke:

Total of 8% patients had positive MRI but diagnosed as non-stroke patients.

Six stroke physicians have given 100% stroke diagnosis in all MRI positive scans.

18.8% were patient diagnosed as MRI non-stroke by one stroke physician and 75% of these patients the diagnosis was changed to stroke on follow up clinics by second consultant physician.

MRI negative Stroke:

Total of 9.7% of patients were labelled as stroke whereas MRI with diffusion weighted imaging was negative.

Five consultants diagnosed MRI negative scans patients 100% as non-stroke

Only two physician diagnosed 16% (7 patients) and 5% (2 patients) of patients as MRI negative Stroke respectively. Among the group of 16% patients, second physician on follow up change the diagnosis to non-stroke in 70% (5 patients) to anxiety related symptoms, migraine with aura and Bell's palsy, remaining 2 patients were followed up by the same physician and diagnosis not changes. In the other 5% group of patients, diagnosis remained the same given the persistence of symptoms on follow up and MRI done > 14 days later.

Conclusion:

Our survey has challenged the previous studies which were conducted retrospectively.

Survey concluded that most ischaemic stroke will show diffusion restriction on MRI DWI and MRI negative stroke are less than 5% if the scan is done within 10-14 days of acute symptoms.

More prospective studies have to be done by Stroke physician in collaboration with the radiologists.

We recommend that MDT approach to be taken in MRI negative stroke / MRI positive non-stroke patient history and examination to be reviewed