

## Arterial spin labelling in focal epilepsies

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Objectives: Arterial spin labelling (ASL) provides a non-invasive means of measuring cerebral blood flow (CBF). The technique uses magnetically labelled arterial blood water protons as endogenous tracer. The hypothesis is that ASL perfusion changes may occur peri-ictally in patients with focal epilepsy. Methods: Patients with focal-onset seizures were studied for ASL perfusion changes in the peri-ictal period. Based on the MRI findings patients were grouped: Group A; MRI positive for the lesion; Group B: MRI positive for 2 lesions and Group C: MRI negative for lesion. Areas of hyper or hypoperfusion were correlated with seizure semiology, inter-ictal EEG and MRI findings. Results: During the study period, 27 patients (mean age: 39.3 years, range 10-73 years; M: F 9:18) with focal epilepsy were studied. The time interval between seizure and ASL study ranged 15'-72 h, mean 21.28 h. Group A: of 19 patients, 15 (79%) had ASL changes (7 hypo-perfusion, 8 hyper-perfusion) correlating with MRI lesion. Group B: out of 4 patients, 3 had ALS perfusion of only one lesion. Group C: all the 4 patients had ASL perfusion abnormalities corresponding to the epileptogenic focus in the EEG. Time interval between seizure and ASL study: hyperfusion - mean 3h (range 0.25-7h); hypoperfusion - mean 17h (range 1-48h); and no ASL perfusion changes - mean 61h (range 52-72h). Conclusion: Peri-ictal ASL helps in localizing the possible epileptogenic focus in patients with focal epilepsy, even in MRI negative patients. The earlier the study, higher the yield.