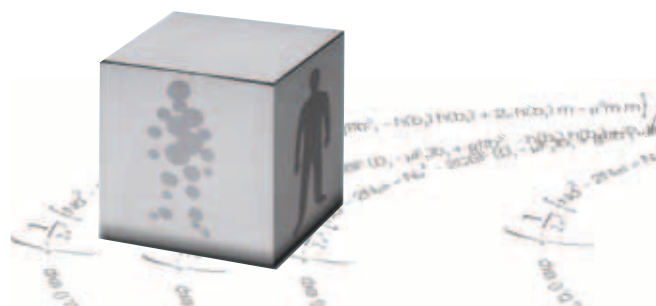


Case Report

STROKE:
Early Spontaneous Recovery
with
Persisting Occlusion



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Patient history

A 79 year-old woman with a high blood pressure history arrived at the Emergency Unit one hour after stroke onset. Clinical examination disclosed sudden right hemiplegia and severe aphasia.

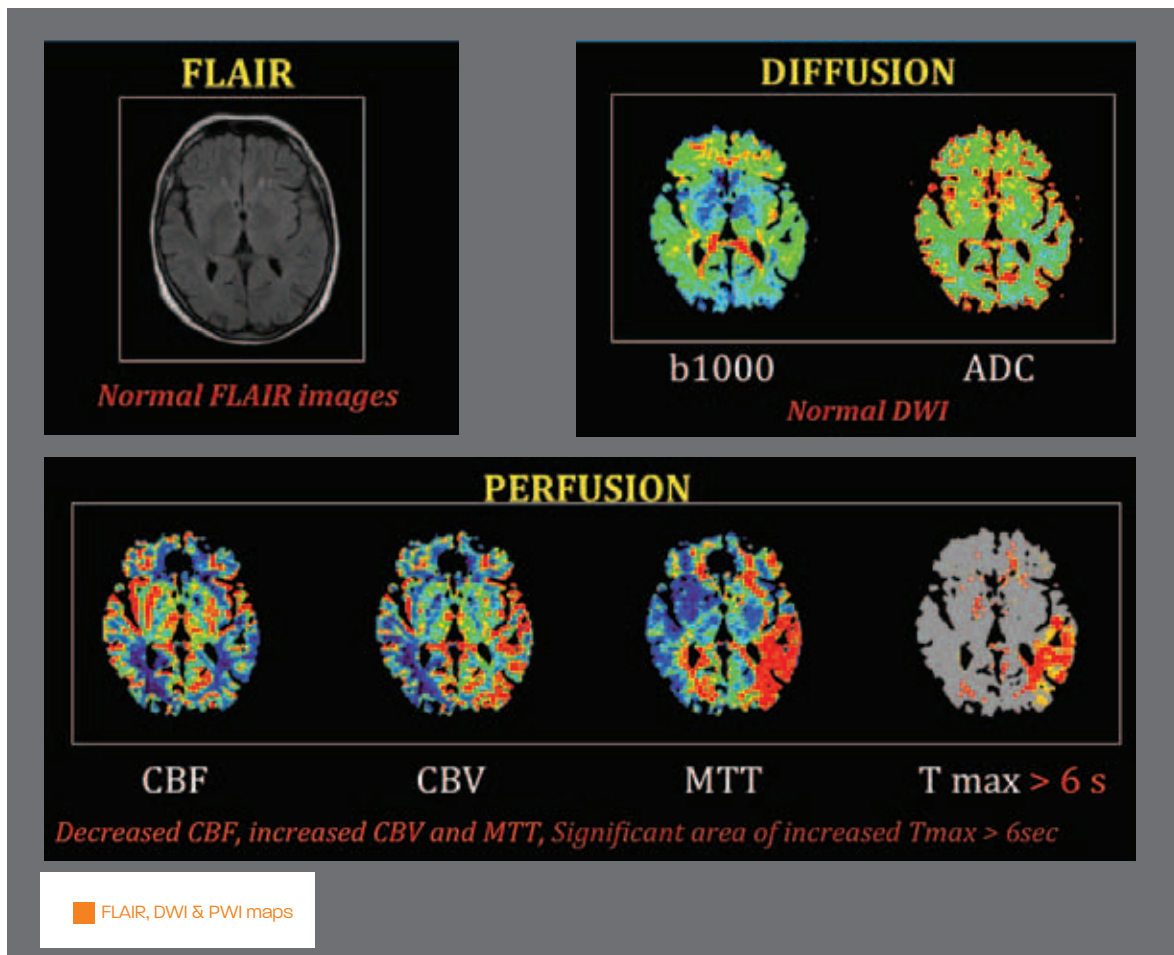
Upon arrival at the Stroke Center she showed signs of almost complete spontaneous neurological recovery (NIHSS=2 ; loss of word and slight facial paresis) with very high spontaneous blood pressure values (230 – 120 mmHg) and a normal ECG.

MRI images were processed with PerfScape/NeuroScape (Olea Medical, La Ciotat, France).

FLAIR and diffusion-weighted images were normal while perfusion-weighted imaging showed an area of decreased CBF involving language areas and associated with a significant increase of CBV, MTT and Tmax values (total diffusion - perfusion mismatch). In such case with persistent cerebral artery occlusion, a normal diffusion image

associated with significant hypoperfusion in the territory irrigated by this artery corresponds to what we call a «total mismatch».

Time-of-flight MR angiography and T2* sequence showed 2 thrombi occluding M2 branches.



Low dose of intravenous nicardipine was injected to decrease BP to 185-105 mmHg and a sudden but expected recurrence of aphasia and hemiplegia occurred when systolic BP decreased to 180 mmHg. NIHSS at this point was 12 (right hemiplegia and severe aphasia).

The decision was taken to perform IV thrombolysis 105 mn after stroke onset.

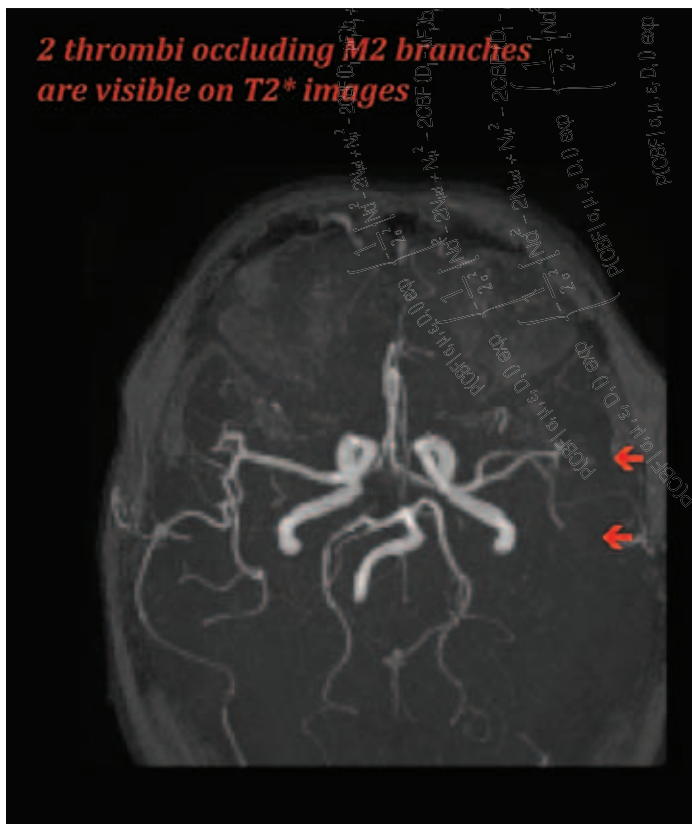
Few hours after, a 98% neurological recovery was observed (isolated slight loss of word). 24 hours after IVT, no complication was observed and the CT angioscan revealed complete arterial recanalization associated with a full clinical recovery.

Atrial fibrillation was detected during continuous monitoring, therefore IV unfractionated heparin was injected 24 hours after IVT and followed by oral anticoagulation few days after.

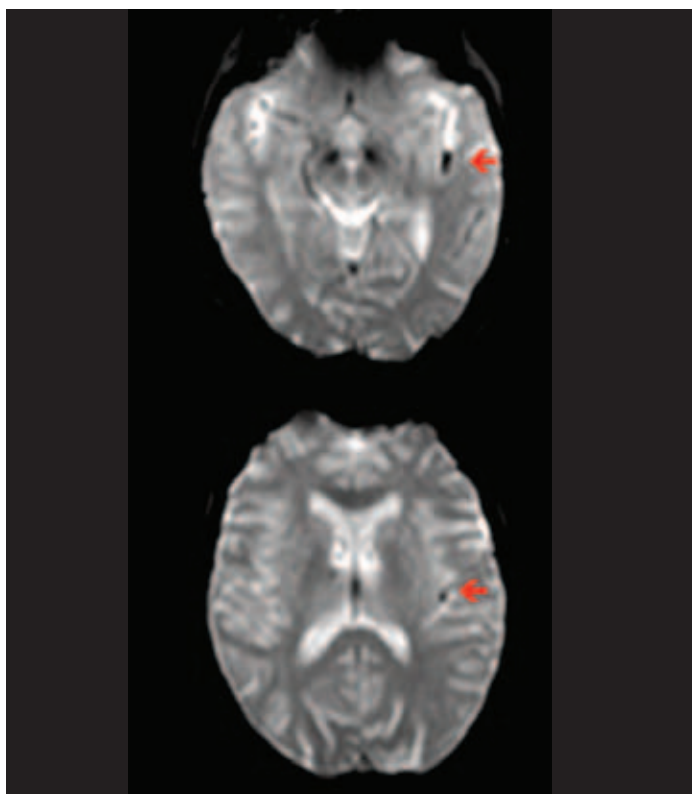
Discussion:

Some patients may spontaneously have an early and complete neurological recovery in spite of a persisting intracranial artery occlusion. Indeed, an initial high BP associated with an increased CBV is able to compensate the decreased CBF induced by the thrombus still located in the brain artery. However, initial increased BP values are often related to stroke-induced stress and when BP spontaneously decreases early after arrival of the patient, a recurrence of hemiplegia is feared if recanalization is not obtained.

Therefore, when an early and almost complete spontaneous neurological recovery is observed and associated with a persisting intra-cranial arterial occlusion and a diffusion-perfusion mismatch, an IVT must be discussed.



TOF MR angiography

$$P(CBF | \sigma, \mu, \epsilon, D, I) \exp \left\{ \frac{1}{2\sigma^2} [Nd^2 - 2N\mu d + N\mu^2] \right\}$$


T2* sequence

$$P(CBF | \sigma, \mu, \epsilon, D, I) \exp \left\{ \frac{1}{2\sigma^2} [Nd^2 - 2N\mu d + N\mu^2] \right\}$$