tPA therapy. The initial DWI scan (Fig. 1) showed a hyperintense signal within the left lentiform nucleus (arrow). The initial PWI scan (Fig. 2) showed a larger, wedge-shaped area of delayed perfusion (outlined) involving most of the territory supplied by the middle cerebral artery (MCA). This finding was in keeping with a proximal MCA occlusion, as demonstrated on magnetic resonance angiography (Fig. 3, arrowhead).

Intravenous tPA therapy was started nearly 6 hours after the presumed onset of the stroke. One hour later some neurological improvement was observed, and 6 hours later the patient had some residual dysarthria, aphasia and facial weakness but had regained most of the strength in his right arm and leg and had a revised NIHSS score of 5. Although a repeat DWI scan at 6 hours post-tPA (Fig. 4) revealed changes in the left lentiform nucleus (arrow) that were similar to those seen before thrombolytic therapy, a repeat PWI scan showed reversal of many of the changes in the MCA-supplied territory (Fig. 5). The radiological improvement seen on the PWI scan and the neurological improvement seen clinically were in keeping with recanalization of the left MCA, as seen on magnetic resonance angiography (Fig. 6). CT scanning on subsequent days (not shown) confirmed the subcortical nature of the infarct, without hemorrhagic complication. After 48 hours the patient's NIHSS score had improved to 3, and he was referred for stroke rehabilitation before discharge home.

Although tPA is typically used only within the first 3 hours after onset of an acute ischemic stroke, a meta-analysis of thrombolytic studies has shown that patients may still benefit from tPA therapy if it is begun up to 6 hours after symptom onset, without a significant increase in the risk of hemorrhagic complications.[2] The case we have described illustrates how MRI, of both perfusion and diffusion defects, may ultimately help to select patients who would benefit the most from tPA therapy in the 3–6-hour window.

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HEALTH AND DRUG ALERTS

Oseltamivir (Tamiflu) unsafe in infants under 1 year old

Reason for posting: Influenza is a common and potentially serious infection in children. Neuraminidase inhibitors are sometimes used to treat and prevent the disease in some children. However, the US Food and Drug Administration (FDA) recently warned that studies involving juvenile rats showed potential toxicity of oseltamivir for human infants less than a year old (www.fda.gov/medwatch/SAFETY/2003/safety03.htm#tamiflu).

The drug: Oseltamivir (Tamiflu) inhibits the influenza neuraminidase enzyme, thus preventing the release and dispersion of budding viruses. In Canada the drug can be used to treat influenza in children older than 1 year with symptoms of less than 2 days' duration and to prevent the disease in children over 13 years old.

The unpublished trial described by the FDA involved 7-day-old rats being fed a single dose of 1000 mg/kg of oseltamivir — about 250 times the dose recommended for children. The treatment was toxic, often killing the animals, and brain levels of the drug were 1500 times those of adult animals exposed to the same dose. It is hypothesized that an immature blood–brain barrier may cause the toxicity.

What to do: Oseltamivir should not be given to children less than a year old. Basic infection control precautions such as keeping the child away from sick people, frequent handwashing and flu shots (for children over 6 months old and caregivers) may be the best way to prevent the disease. The relative safety profile of other antiviral agents (amantadine, zanamivir) in the very young pediatric population is unclear. — *Eric Wooltorton*, CMAJ