The Role of High-Resolution Intracranial Vessel Wall Imaging in Intracranial Vasculopathies

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Purpose

- To illustrate the spectrum of different intracranial vasculopathies using HR-VWI sequences
- To demonstrate the applicability of this technique in the differential diagnosis and aiding in detecting vascular involvement.

Background

- Conventional imaging techniques for intracranial arteries (CTA, MRA and DSA) demonstrate abnormalities of the vessel lumen, but may fail to demonstrate vessel wall changes. The high-resolution vessel wall magnetic resonance imaging (HR-VWI) had been used due to its direct visualization of the vessel wall.
- In this exhibit we provided a pictorial review of some vasculopathies in which the technique may be useful in clinical practice.

Pictorial review of intracranial vasculopathies
that show the potential benefits of HR-VWI

Intracranial atherosclerotic disease. A 60-year-old man presented with right lower limb weakness for 2 months with progression to the face and upper limb day 1 day ago (Figure 1).

Giant cell arteritis. 69-year-old woman with giant cell arteritis admitted with seizures (Figure 2).

Internal carotid dissection. A 9-year-old boy was admitted in the emergency department with seizures (Figure 3).

Syphilis-associated vasculitis. A 26-year-old man presented acute-onset right hemiparesis, diplopia upon horizontal gaze and fever. The CSF and blood samples were positive for syphilis. A test for HIV was positive (Figure 4).

Conclusion

- HR-VWI somehow transcribes the pathophysiological mechanism of vascular disease.
- It can be useful in cases where direct visualization of the vessel wall helps narrow the differential diagnosis (including infectious vasculitis) according to the pattern of involvement.
- Monitoring vasculitis treatment is also a potential benefit.
- This sequence also allowed to detect cranial nerve involvement (not detected in conventional sequences in this case).

Limitations

- Further studies are needed to evaluate the accuracy of the technique.