The Problem

- Dural venous sinus thrombosis is a common disease in daily practice. This disorder is potentially lethal but treatable. Whenever clinically suspected, prompt investigation by noninvasive imaging modalities—such as Computed Tomography Venography (CTV) and Magnetic Resonance Venography (MRV)—is indicated for prompt diagnosis and treatment.
- At our institution, traditionally only Time of Flight (TOF) MRV sequences have been used in the detection of dural venous sinus thrombosis. More recently, we started to use 3D phase-contrast (PC) technique. However, because both these techniques use MR flow phenomena for contrast generation, they are subject to create flow-related image artifacts and misregistration of the vascular flow.
- The use of I.V. Gadolinium contrast-enhanced MRV is less likely to be affected by complex flow and—when combined with Magnetization-Prepared Rapid Gradient Echo technique (MPRAGE) sequence—may prove to be superior to TOF or phase-contrast MRV techniques and offer the most accurate evaluation of the dural venous sinuses using MRI.

Aim/Goal

To demonstrate that the use of MP-RAGE with intravenous gadolinium-based contrast sequence improves the detection of dural venous sinus thrombosis when compared with 2-D and 3-D time of flight (TOF) and phase-contrast techniques alone.

The Team

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The Interventions

- To update the current MRV protocol for evaluation of dural venous sinus thrombosis
- To communicate to the referral clinicians about this updated MRV protocol

Lessons Learned

- Gadolinium-enhanced MPRAGE sequence is superior to TOF and phase-contrast MRV techniques for the diagnosis of dural venous sinus thrombosis.
- If there are no clinical contraindications, gadolinium-enhanced MPRAGE images should be routinely included in the MRI protocol for the diagnosis of dural venous sinus thrombosis.

Next Steps/What Should Happen Next

- Gadolinium-enhanced MPRAGE sequences will be combined with Phase-Contrast MRV technique, in evaluation of cases referred with suspicion of dural venous sinus thrombosis.
- The referring physicians will be informed of this updated protocol and will be requested to order all the MRV examinations with gadolinium, provided there are no contraindications like pregnancy, or renal failure.

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