Assessment of Variations in Venous Anatomy Using Auto-Triggered Elliptic Centric-Ordered 3D Gadolinium-Enhanced MR Angiography

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Purpose
Venous anatomy is often overlooked on both angiographic and MR imaging. Time-of-flight MR angiography suffers from several shortcomings including poor spatial resolution, spin saturation, and inadequate signal-to-noise ratio. The aim of this study was to employ the auto-triggered elliptic centric-ordered (ATECO) technique to demonstrate the variation in venous anatomy.

Materials & Methods
Between January 2002 and December 2003, 60 patients underwent MR examinations using an ATECO sequence for MR venography. The ATECO technique has been applied previously to MR angiography of spinal dural arteriovenous fistulae and intracranial arteriovenous malformations (1, 2) and has been described recently for MR venography (3). No intracranial abnormalities were present in this patient group who were selected to represent a normal population for the assessment of venous anatomy.

Results
There were 29 female and 31 male patients. The mean age was 60 years old. The venous anatomy was demonstrated clearly in all patients. The anatomical variations of the major sinuses and cortical veins are presented.

Conclusion
The ATECO sequence is a robust technique with high spatial resolution and signal-to-noise ratio. The venous anatomy is clearly demonstrated affording an opportunity to discuss normal variations and anatomic pitfalls with special reference to the ATECO sequence.

References