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Cost-Effective CT & MRI Contrast Agents



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Reply:

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Reply:

We thank Dr Gröschel and colleagues for their interest in our work and we appreciate their comments. We agree that patients with intracranial stents require close follow-up, preferably with noninvasive imaging. However, given the sparse data available, a strong recommendation for any specific imaging technique is limited. The purpose of our article was not to advocate any specific imaging study for follow-up of patients with stents but rather to highlight a potential pitfall with CT angiography (CTA) that we have observed.

We believe that CTA is the best choice available in most institutions for several reasons: CTA is widely available at all hospitals able to perform intracranial stent placement. CTA is readily available and easy to interpret by most physicians. CTA data can be postprocessed to evaluate vessels in multiple projections and with different reconstruction algorithms. Physiologic data from perfusion imaging can be performed concurrently, allowing further understanding of the hemodynamic consequences of the stent.

Transcranial duplex sonography (TCD) is potentially a viable alternative; however, most institutions do not have wide access to high-quality TCD. TCD has the same or greater limitations as standard sonography in that it is very operator-dependent and potentially limited by the presence or absence of acoustic windows. There are also pitfalls in evaluating TCD data. In the setting of in-stent restenosis (ISR), TCD velocities are usually increased. However, as in the

present case, they can be blunted or decreased, and in other cases, they can be normal or unable to be insonated. As such, almost regardless of the TCD data—high, low, blunted, normal, etc—if there is clinical suggestion of ISR, a confirmatory study such as a CTA or angiography is almost always required to dictate patient management. Although advocating TCD for the diagnosis of ISR, the authors do not present any data to demonstrate the sensitivity or specificity of the test. In fact, in the case presented, the TCD findings were somewhat confusing and required additional testing to understand. As such, we advocate noninvasive imaging to screen patients with intracranial stents, but conventional digital subtraction angiography is required in any patient with suggested restenosis on clinical findings or noninvasive imaging.

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