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Reply

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Dural Arteriovenous Fistulae: Noninvasive Diagnosis with Dynamic MR Digital Subtraction Angiography

We read with interest the article by Coley et al (1), in which the authors describe their early experience with an experimental dynamic MR angiographic method using a contrast agent and a digital mask for assessment of dural arteriovenous fistulae (AVF). It is well known from the literature (2, 3) that MR digital subtraction angiography is a noninvasive, dynamic tool for intracranial MR angiography.

It should be noted that the reference list in Coley et al's article is incomplete. The statement, "we present the first report of its use in the detection and classification of dural AVF" is incorrect. Our article (2) describes the technique and promising results in the assessment of brain arteriovenous malformations and dural AVF.

This point of view is supported in an editorial published in the *AJNR* (4). Similar to an article by Griffiths et al (5) (see comments [6]) published in the *AJNR*, the case report by Coley et al overlaps substantially with previously published investigations (2, 3). Despite that a case report should present an important and unique clinical experience, the article by Coley et al must be classified as a redundant publication according to the principles of the HEART Group (7). When submitting a manuscript, authors should make a full statement to the editor regarding previous reports to avoid redundant publication according to these principles.

In addition, not to cite basic articles when reporting a technique for the first time is unscientific. The specificity and sensitivity of MR digital subtraction angiography to classify dural AVF has not been formally evaluated. On the basis of our experience, we think that MR digital subtraction angiographic techniques in their current forms are limited in the detection of small and low-flow fistulae that involve only cortical veins. Because dural AVF with cortical drainage are at risk for bleeding, MR digital subtraction angiography cannot currently replace conventional digital angiography with its high anatomic resolution.

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Reply

The preliminary results of imaging intracranial vascular malformations with time-resolved MR angiography as presented by Klisch et al (1) were not referenced in our recent case report (2). This was an omission for which we apologize. Their intimation, however, that we deliberately committed "academic fraud" is totally unfounded and deeply offensive. We strongly encourage the readers of the *AJNR* to read their article, not because it is a landmark publication but to illustrate why our report is far from redundant.

The article by Klisch et al (1) is essentially a preliminary technical report. They describe a technique for dynamic MR angiography that is different from ours in many respects, including bolus dynamics, image acquisition, postprocessing, and image analysis. Furthermore, we attempted to explore the value of this technique in clinical practice. Klisch et al failed to include any clinical information for either of their two patients with dural AVF, and no description of any other imaging findings was presented. One dural AVF was presented as a figure with rudimentary annotation; the other was not described at all. No attempt was made to classify lesions, and no discussion of the ability of the technique to show both pathologic and normal patterns of venous drainage and the relevance of these findings to prognosis and treatment was presented. Their use of a signal intensity time curve (for an arteriovenous malformation) to show early opacification of the venous structures that is self evident from the 2D MR angiograms is facile, as is the disappearance on MR angiograms of an embolized arterial pedicle.

We proposed for the first time, and described, the use of signal intensity time curves to potentially identify those dural AVF that cause venous hypertension and to monitor the effects of intervention. We also included, albeit as an addendum, our success in showing Djindjian type 3 cortical fistulae by using dynamic MR digital subtraction angiography. We now have experience with using MR digital subtraction angiography for the detection of 14 dural AVF, but are we to assume that any future publications on this topic will be worthless?

This is the second time that Klisch et al have chosen to complain to the *AJNR* that their work had not been referenced (3). Their same article (with a total of two cases of arteriovenous malformation) was also mentioned when we published our preliminary experience with 20 cases of arteriovenous malformation during the same year (4). We were criticized for not including two references from their article, even though they were published after the submission of our article to the *AJNR*. Furthermore, the contribution of Hennig and Strecker (5) on dynamic MR digital subtraction angiography was duly recognized in our article.

In the past we have always found it rather amusing to listen to other authors squabbling in international journals. Surely, letters such as these are what constitute redundant publications; publications that exist only to lengthen curriculum vitae and increase citations rather than increase the body of knowledge regarding early clinical experience with an exciting technique. If anyone should feel aggrieved by the inadequacy of our reference section, it should be Wetzel et al (6) and Aoki et al (7), and it is right that we acknowledge their early work with dynamic angiography.

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