Letter by Gross and Du Regarding Article, “Intracranial Dural Arteriovenous Fistulae: Clinical Presentation and Management Strategies”

To the Editor:

We read with interest the review by Miller and Gandhi1 on dural arteriovenous fistulae (dAVF). Limited by word count of a letter to the editor, we cannot provide more references/details; however, we have several inquiries.

The authors state that dAVF may recruit pial arterial supply. Do they have a radiographic example of such a case? It would seem almost by definition that dAVF are supplied exclusively by meningeal arteries. Perhaps a pial arteriovenous fistula or arteriovenous malformation may be of mixed supply, but it is difficult to understand from a pathophysiologic basis that how a dAVF may recruit pial arterial supply.

The authors credit an article in Neurosurgery from 1984 as one of the first to identify cortical venous drainage as the main risk factor for serious sequelae from dAVF. In their oft-cited 1972 article in Radiology, Houser et al2 clearly identified this association; soon after in 1977, professor Djindjian had already devised a classification scheme to reflect this. This scheme was later modified into the modern Cognard classification scheme.

dAVF hemorrhage rates are cited from 3 studies, 2 of which were published by the same group. There are multiple additional studies that have evaluated this rate in addition to a recent pooled analysis of 254 patients with cortical venous drainage that reported an overall annual hemorrhage rate of 6%.3 The authors do not highlight the important facts that venous ectasia (Cognard type IV) and presentation modality (asymptomatic versus symptomatic) are also significant risk factors for dAVF hemorrhage. These important factors also explain the wide variability of cited hemorrhage rates for dAVF across studies given varying proportions of patients presenting with symptomatic dAVF and venous ectasia.

The authors cite a study based on 7 patients with pulsatile tinnitus and benign fistulae, reporting unrealistically high rates of 86% for sensitivity and 100% for specificity for the detection of dAVF feeders on computed tomography angiography. This is an extremely misleading figure; malignant fistulae such as those supplied by the middle meningeal artery with direct cortical venous drainage are frequently hidden by bone unless there is considerable distension of cortical veins.

The authors state that dAVF are often completely curable by endovascular and less commonly by surgical methods. This is actually incorrect. Only if the fistula point can be reached via transarterial or transvenous means can a dAVF be cured endovascularly; however, dAVFs may be cured by surgical skeletonization or direct fistula point disconnection. dAVFs are often supplied by small serpentine arterial vessels and ambitious transarterial embolization too proximal to the fistula point may lead to an initial angiographic cure that is likely to be ultimately short-lived. The authors use 1 paragraph to summarize decades of surgical approaches and advances. Surgical disconnection at the fistula point is all that is needed to cure a high-grade convexity dAVF. One does not excise all feeding arteries or draining veins as the authors seem to suggest; can they provide an example of such a case? For low-grade lesions or those draining into a sinus with cortical venous reflux, sinus skeletonization is performed. The authors describe that a surgical approach can be ideal for anterior fossa dAVF. In the opinion of centers with microsurgical capabilities, it is the first line treatment for these lesions because vision is not placed at risk in contrast to transarterial endovascular approaches.

Stereotactic radiosurgery and gamma knife surgery seem to be equated; however, gamma knife is, of course, only a type of stereotactic radiosurgery. We have used linear accelerator radiosurgery in the treatment of dAVF at our center, publishing a systematic review 3 years before that cited by the authors incorporating all types of stereotactic radiosurgery with striking similarities and conclusions.4

Disclosures

None.

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Bradley A. Gross and Rose Du

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