Arteriovenous malformation presenting with trigeminal neuralgia and treated with endovascular coiling

Sir,

Arteriovenous malformations (AVMs) are known to cause trigeminal neuralgia (TGN). The incidence of posterior fossa AVM is less than 10% of all intracranial AVMs. The association of an AVM and TGN is rare. Eisenbrey and Hegarty were the first to describe a case of AVM presenting with TGN in 1956. Staged endovascular coiling as an adjunct to surgery for large (3 cm) AVMs can achieve satisfactory reduction in size, making them amenable to surgery.

We present a case of a 56-year-old man presented with a 6-year history of severe right-sided sharp lancinating pain affecting the mandibular division of the trigeminal sensory distribution. On examination there appeared to be a trigger zone over his right zygoma. There was no evidence of any neurological deficit. He was maintained on 1200 mg of carbamezapine a day with little effect.

High-resolution magnetic resonance imaging (MRI) and gadolinium enhanced magnetic resonance angiography (MRA) revealed a very large vascular loop of the right superior cerebellar artery (SCA) passing inferiorly and causing distortion of the root entry zone of the right trigeminal nerve.

Cerebral angiography confirmed the presence of a posterosuperior vermian AVM fed by the right SCA and draining into the vein of Galen [Figure 1]. Endovascular embolization was performed using Berenstein liquid coils. This resulted in significant reduction in blood flow with transit time through the AVM doubled. Follow-up MRI and MRA with gadolinium after 6 months showed partial patency of the AVM with dilation of tentorial veins bilaterally and a large loop of SCA on the right. Repeat angiography and embolization showed no change in the appearance of the superior vermian AVM with its three feeders (two from the SCA and one from PICA). Using the same technique catheter was inserted into the SCA and the superior of the two feeders. A straight Berenstein liquid coil was injected. This produced gratifying reflux up the pedicle on check injection and the flow was clearly reduced further [Figure 2]. Despite many attempts it was not possible to catheterize the second feeder. The procedure was terminated without any neurological complication. The patient was discharged after 3 days. After a follow up of 18 months the patient remain free from pain and there was a significant re-
Sir,

A 30-year-old male presented with a history of headaches and vomiting for 2 weeks. He had bilateral papilledema. There were no focal neurological deficits. Computer tomography (CT) scan of the brain showed a contrast enhancing dural-based mass attached to the falx cerebri and extending on either side of the midline. Magnetic resonance imaging (MRI) of the brain showed the lesion to be a falx-based tumor, which was isointense on T1 and T2 weighted images [Figure 1]. He underwent a biparietal craniotomy, interhemispheric approach, and total excision of the tumor. At surgery, the tumor had a poor plane of dissection from the surrounding brain and was very vascular.

The histopathology showed a very cellular tumor that had spindle cells arranged in long fascicles with an intervening collagenous stroma. There was no evidence of mitosis or anaplasia. Immunohistochemistry showed that the cells were positive for CD34, bcl-2, and vimentin and negative for epithelial membrane antigen (EMA) and S-100 [Figure 2]. The MIB-1 labeling index averaged 2%. Based on these findings, a diagnosis of solitary fibrous tumor was made. The patient made good neurological recovery and is symptom-free 1 year postoperatively. The follow-up CT scan shows no evidence of recurrent tumor.

Solitary fibrous tumors (SFT) are rare mesenchymal tumors arising from the meninges, which clinically and radiologically resemble meningiomas. Histopathologically they resemble fibrous meningiomas and haemangiopericytomas. Solitary fibrous tumors have distinct immunohistochemical features, which distinguished them from meningiomas and other tumors.

This case indicates the feasibility of embolization for TGN in selected patients. In this case the angioarchitecture meant that liquid embolic agents such as cyanoacrylate glue were contraindicated. The aim of the procedure was to reduce flow in the AVM with coil embolization. Large AVMs can be treated with staged embolization and surgery (operative surgery or radiosurgery) if needed. A multimodality approach (embolization, radiosurgery, surgical exploration) is the current policy for treating AVMs and takes into account the cumulative risk of bleeding, the location and size of the AVM and the presence of venous anomalies.

Figure 1: Axial T2 weighted MRI showing the falx based tumor

Figure 2: Vertebral angiogram following first embolization showing marked reduction in A-V shunting. The deposition of coils is clearly shown.

T. C. Athanasiou, S. Nair, H. B. Coakham, T. T. Lewis
Department of Neurosurgery and Neuroradiology, Frenchay Hospital, Bristol, UK. E-mail: tathan5253@aol.com

References

Accepted on 27-12-2004