Mouse Models for Brain Arteriovenous Malformations

S. Paul Oh, PhD

Barrow Aneurysm and AVM Research Center (BAARC), Barrow Neurological Institute, Phoenix, AZ

Brain arteriovenous malformations (AVMs) are abnormal vessels that are prone to rupture causing life-threatening intracranial hemorrhage (ICH). The estimated prevalence of brain AVMs is 1 in 2000 among healthy individuals. Patients with brain AVMs may remain asymptomatic or experience epileptic seizures, focal neurological deficits, or ICH, which is the most feared complication and the primary reason to treat. Overall, brain AVMs account for 25% of hemorrhagic strokes in adults, and up to 40% of brain AVM patients die or remain functionally impaired within one-year after ICH. Each of the existing treatment modalities carries a non-trivial rate of procedure related complications. Several animal models have been presented, but all of these existing models have limitations to be used for preclinical studies. Our group has been working on generating longitudinal preclinical models for both familial and sporadic brain AVMs. These models would be useful resources not only to study the mechanisms but also for testing potential therapies for brain AVMs.