Point: CFD—Computational Fluid Dynamics or Confounding Factor Dissemination

Stimulated by our ongoing uncertainty about which unruptured cerebral aneurysms to treat brought about by a near-complete lack of meaningful clinical trial data, facilitated by substantial interest in computing power, and promulgated by scientists and engineers facile in generating massive amounts of data on estimated flow in virtual tubes, computational fluid dynamics (CFD) now holds a prominent position in the endovascular research community. Physicians see color displays generated by CFD and hope that we are starting to gain insight into why some aneurysms rupture and others do not. Journal editors have welcomed the field of CFD because of its captivating color schemes perfect for cover material, not. It is extremely large clinical datasets and sophisticated tools such as machine learning.

Until now, neurointerventionalists have marveled at the aesthetically pleasing color images that CFD provides, hoping that someday soon they would lead to clinical application. Clinicians would love to have a CFD button to push that provides a “treat/do not treat” decision for a given patient, but that is probably not going to happen soon. To help define what, if any, flow-related parameters really matter clinically, CFD researchers will need to do a lot more work to close the gaps in information and address the conflicting information and confounding variables.

References

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